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Enumeration of the Species of PLANTS collected by Dr. C. C. Parry, and Messrs. Elihu Hall an J. P. Harbour, during the Summer and Autumn of 1862, on and near the Rocky Mountains, in Colorado Territory, lat. 39°—41°.

BY ASA GRAY.

An interesting account by Dr. Parry of his first explorations of the Rocky Mountains in Colorado Territory, made in the summer of 1861, was published in the American Journal of Science and Arts, vol. 33, 1862. This was followed by an enumeration of the plants in the choice botanical collection which he made, as determined by myself, Dr. Engelmann and others. The importance of this pioneer exploration, both in a physico-geographical and a botanical point of view, decided Dr. Parry to repeat and extend it the following year, to undertake more full and exact observations upon the configuration of the district, and the altitude of the loftier peaks, and to secure a larger botanical collection. In the latter view, Dr. Parry was joined by two zealous and enterprising botanical companions, Messrs. Hall and Harbour, of Illinois, who devoted their entire energies to the collection of plants. The botanical collection, accordingly, through these conjoint labors and explorations, is full, excellent, and of great interest. Along with a fair proportion of species new to science or new to the region, it brings to light and makes accessible to botanists generally, many of the late Mr. Nuttall's discoveries made almost thirty years ago, and even some of those of his first journey up the Missouri, almost half a century ago, authentic specimens of which hardly exist, except in the herbarium of the Academy, in that of Mr. Durand, at Philadelphia, and in the Hookerian herbarium at Kew.

It is in this regard, namely, on account of the intimate association of the name and scientific career of Nuttall with Philadelphia, and especially with the Academy of Natural Sciences,—the publisher of many of his botanical writings, and the proprietor of his principal botanical collections,—that I have deemed it peculiarly proper to offer the following enumeration for publication in the Academy's Proceedings.

This enumeration is but a *reconnoisance* of the collection in hand. It might have been much extended by descriptions, remarks, and references; and some of the determinations may probably have to be reconsidered. But I deem it best for our science to publish it at once, as it is, that it may be early in the hands of botanists along with the distributed sets of specimens, thus enhancing the usefulness of the collection, and affording the widest opportunity for the prompt correction of oversights, omissions, or mistakes on my part, of which there may be not a few.

It should be remarked that the general collection, although made by the three associates conjointly, is distributed under the tickets of Messrs. Hall and Harbour,—upon whom indeed the labor of the collection more immediately devolved,—and is numbered quite independently of Dr. Parry's collection of 1861, thus avoiding all danger of confusion between the two. But a small separate collection made by Dr. Parry late in the summer, at stations visited by himself alone, which supplements or helps out the general collection, bears Dr. Parry's numbers of the former year, (which, being already published, are here mentioned only when there is some occasion for it,) or, when of plants not in that collection, the numbers are in continuation of it,—viz.: 398, 399, and so on. Reference to these additional numbers is chiefly made in foot-notes, to which also the characters of new species, &c., are consigned.

The plants were numbered and distributed into sets by Messrs. Hall and Harbour before they were seen by me, and a full set was supplied to me for examination, which serves as a basis for the following list. This accounts for a few misplacements, and also for the occasional mixture of two species under the same number ; which, under the circumstances, it was not easy altogether to avoid. The collectors appear to have been somewhat too fearful of distributing the same species under two or more numbers ; but the opposite course, in case of doubt, is preferable. Even well-marked varieties had better be kept separate in distributed collections.

ENUMERATION.

RANUNCULACEÆ.

1. ATRAGENE ALPINA, L. 2. CLEMATIS DOUGLASII, Hook. 3. C. LIGUSTICIFOLIA, Nutt. 4. PULSATILLA NUTTALLIANA, Gray, which I am now convinced is properly referred to *P. patens*, and especially by Regel to his var. *Wolfgangiana*. Some of the specimens are very large and fine. 5. ANEMONE MULTIFIDA, DC., both red and white-flowered. 6. A. CAROLINIANA, Walt. ; on the plains. 7. A. NARCISSIFLORA, L., from the alpine region ; not before known this side of Russian America ; fine specimens, with the flowers only three, two, or one to the involucre. 8. THALICTRUM FENDLERI, Engelm. ; the diagnosis noted in the Enum. Pl. Parry, p. 12, and now the species itself is obtained, "on low mountains." 9. T. SPARSIFLORUM, Turcz.,[*] in fruit, "the whole plant with a very heavy narcotic odor," according to Dr. Parry. 10. T. ALPINUM, L., large specimens. 11. RANUNCULUS CYMBALARIA, Pursh. 12. R. HYPERBOREUS, Rottb. var. *natans*, C. A. Mey. "In water or in swamps, at middle elevations in the mountains, or subalpine ;" from the station and from the size of the plants so much approaching the small and emersed form of *R. Purshii* var. *repens*, Hook., (*R. Gmelini*, DC., of which a few specimens were also collected,) that it might belong to that species except for the want of a style ; mature fruit not collected. 13. R. (CYRTORRHYNCHA) NUTTALLII, the very rare *Cyrtorrhyncha ranunculina*, Nutt. in Torr. and Gray Fl., which is rightly determined by Bentham and Hooker to have the ovule erect, and therefore to be a Ranunculus, notwithstanding the nervose achenia.[†] 14. R. ESCHSCHOLTZII, Schlecht., Hook. ; same as the broader-leaved specimens of Parry's No. 80 ; has glabrous peduncles, smaller flowers, and shorter styles than *R. nivalis*, but Greenland specimens of Vahl's collection approach it. 15. R. AFFINIS, R. Br. var. *leiocarpus*, Trautv. : the same as narrow-leaved specimens mixed last year with Dr. Parry's No. 80 (vide Sill. Jour., 33, p. 404) ; may be a form of *R. auricomus* if that ever has glabrous achenia, but they compose a rather oblong or cylindraceous head. 16. R. AFFINIS, var. *cardiophyllus*. (*R. cardiophyllus*, Hook.) The flowering specimens, with their cordate-rotund radical leaves, villous pubescence and large flowers (the corolla a full inch in diameter) perfectly accord with Hooker's figure, except that the stature is dwarf, and the young carpels show a rather long style, as figured; but accompanying fruiting specimens wholly accord with *R. affinis*. 17. R. ADONEUS, n. sp.,[‡] No. 81, of last year's collection of Dr. Parry, who has now supplied the fruit ; and the species proves to be a new and peculiar, handsome and strictly alpine one.[§] 18. R. FLAMMULA, L.,

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[*] Dr. Regel's note under this species, in his elaborate revision of *Thalictrum*, is founded on a misreading of my foot-note in Pl. Wright, 2, p. 8, where to *T. sparsiflorum* is referred *T. clavatum*, Hook., *non* DC. The Candollean species is wholly different, and a native only of the mountains of Carolina.

[†] RANUNCULUS (CYRTORRHYNCHA : petala supra basim *callosa* : stylus *incurvus*, stigma apiculatum : achenia turgida multinervosa) NUTTALLII : glaber, semipedalis ; radice fasciculata ; foliis radicalibus biternatisectis, segmentis 3–5-partitis, lobis oblongis linearibusve nunc 2–3-fidis ; ramis folio parvo subtensis paucifloris ; petalis spathulatis sepala latiora etiam flava paullo superantibus ; stylo longo gracili ; acheniis majusculis subpaucis in capitulum globosum collectis. Eastern side of the Rocky Mountains ; Independence Rock on the Sweet Water of the Platte. Nuttall.

[‡] Mixed in some sets, I fear, with a little of *R. Escholtzii* or of the real *R. nivalis*.

[§] RANUNCULUS ADONEUS, (sp. nov., : humilis, villo parco deciduo glabratus ; radice fasciculato-fibrosa ; caulibus basi ramentaceis superne 1–3-foliatis nunc erectis simplicissimis unifloris nunc sarmentoso-decumbentibus 2–3-floris ; foliis bipedato-partitis segmentis anguste linearibus, petiolis basi scarioso-dilatatis ; pedunculo brevi ; corolla aurea eximia (plerumque ultra pollicem diametro ;) petalis flabelliformibus sepalis ovalibus subvillosis duplo longioribus, squamula bavar. *reptans.* 19. R. An ambiguous little plant from the alpine region, which might be mistaken for a smaller form of Parry's 79.[*] 20. MYOSURUS MINIMUS, L., from South Park, with somewhat more of a beak to the achenia than in Eastern or European specimens. 21. CALTHA LEPTOSEPALA, DC. 22. TROLLIUS LAXUS, Salisb. var. *albiflorus*, Gray, in Sill. Jour. 33; well-developed specimens. Divisions of the leaves less deeply incised than in the Eastern U. S. plant. 23. AQUILEGIA VULGARIS, var. *brevistyla.* 24. A. CŒRULEA, Torr., equally beautiful with the specimens of last year. 25. DELPHINIUM ELATUM, L., var., Parry's No. 84. 26. D. SCOPULORUM, Gray. 27. A high alpine form of the last. 28. D. MENZIESII, DC.; but if collected east of the Mississippi might be taken for *D. tricorne.* 29. ACONITUM NASUTUM, Fisch.; white and blue, as in Parry's 86.

BERBERIDACEÆ.

30. BERBERIS (MAHONIA) AQUIFOLIUM, Pursh, var. *repens.*

FUMARIACEÆ.[†]

31. CORYDALIS AUREA, Willd., var. CURVISILIQUA (*C. curvisiliqua*, Engelm.), the same as Wright's No. 1309.

CRUCIFERÆ.

32. NASTURTIUM OBTUSUM, Nutt. 33. CARDAMINE HIRSUTA, L. 34. C. CORDIFOLIA, Gray.[‡] 35. STREPTANTHUS ANGUSTIFOLIUS, Nutt.; probably a form of S. SAGITTATUS, Nutt. 36. TURRITIS PATULA, Graham. 37. SISYMBRIUM VIRGATUM, Nutt., but from the silique rather an *Erysimum.* 38. ERYSIMUM CHEIRANTHOIDES, L. 39. E. PUMILUM, Nutt., (which I suppose is also *E. lanceolatum*, R. Br., of the Old World,) as to the fruiting alpine specimens, along with forms of E. ASPERUM, DC., with large flowers (*E. Arkansanum*). The collectors think these are all forms of one species. 40. SYSIMBRIUM SOPHIA, L. (including *S. canescens*, Nutt.), both a smoothish form, with short pedicels and short pods, (*S. brachycarpum*, Richards.), and also with slender pods, and the whole herbage viscid with glandular pubescence,—one of the forms of *S. incisum*, Engelm. 41. DRABA CRASSIFOLIA, Graham; which, in Parry's former collection, No. 93, I named *Draba Johannis*, but it proves to have yellow flowers.[§] With it is mixed a very little *D. stellata*, var. *hebecarpa*, as the species are

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silari parva adnata; acheniis in capitulum ovale digestis lævibus turgidis, rostro longiusculo ensiformi utrinque scarioso-alato! In the high alpine region, close to the snow. Dr. Parry's specimens of 1862, collected later in the season,—with some mature fruit, and with some of the stems becoming procumbent or runner-like, and producing a flowering shoot from the axils of the cauline leaves,—enable me to characterize this remarkable species. In the early state it bears some resemblance to *Adonis vernalis.* The scarious wings of the style are sometimes decurrent on the achenium, which, again, often has a delicate hyaline wing round the base. Notwithstanding the yellow flowers, the affinity of the species is probably with *R. glacialis*, the carpel and style of which is said to be wing-margined. The corolla is equally large and full.

[*] This, from better specimens collected this year, confirms Mr. Black's opinion that it is a dwarf *R. alismæfolius;* but the uppermost leaf is often three-parted, and the achenia have a small short beak, and are puberulent; the three-parted leaf, the puberulent achenia and too large flower separate it from *R. Flammula* var. *reptans;* and the mostly entire and narrow leaves, the globular head of carpels and the depauperate size (2 or 3 inches) from *R. affinis*, of which it has the achenia. I have seen only a single specimen.

[†] PAPAVER ALPINUM, L., was again collected by Dr. Parry, No. 147.

[‡] This species—which holds its characters well—when described, was compared with our *C. rhomboidea* and *rotundifolia* on the one hand, and on the other, with the European *C. asarifolia*, which, so far as recorded, inhabits only central Europe. But I have just received from Kew a specimen collected by Dr. Lyall on the banks of the Ashtnola River, in the Cascade Mountains of N. W. America, at about lat. 49°, which, so far as my means of comparison extend, appears to belong to *C. asarifolia.* The interesting bearing upon questions of geographical distribution is obvious,—viz.: as to the probable affiliation of *C. asarifolia*, *angulata*, *cordifolia*, *rhomboidea* and *rotundifolia.*

[§] Specimens of this were sent by me to Dr. Hooker, to ask his opinion. He replies: "It is *Draba Johannis* of Europe, according to Mr. Ball, except that the flower is yellow. It is certainly also *D. crassifolia*, Graham, from Rocky Mountains, Drummond, and evidently the same as *D. Fladnitzensis*, Walp., and *D. lactea*, Adams, *D. pygmæa*, Turcz., and a host of others."

regarded by Regel, i. e., *D. muricella*, Vahl., with pubescent silicles, and a smooth form of *D. nemoralis*. 42. D. NEMORALIS, L., two pubescent forms. 44. D. AUREA, Vahl. 45. D. STREPTOCARPA, Gray, Enum. Pl. Parry, p. 13, No. 96, with some reduced, high alpine forms, in which the silicle does not always twist. 43. SMELOWSKIA CALYCINA, C. A. Meyer, (*Hutchinsia*, Desv.) High alpine. 46. THLASPI COCHLEARIFORME, DC. Common at all heights. 47. PHYSARIA DIDYMOCARPA, Gray, var.? The same as Parry's 101, but more hoary, and with a longer slender style. Mature fruit and seeds being still wanting, it yet remains as doubtful as before whether this is a form of Hooker's species. 48. VESICARIA LUDOVICIANA, DC. 49. VESICARIA MONTANA, n. sp.,* from the middle mountains; also collected last year at Eureka by Mr. Howard, but without fruit. 50. STANLEYA INTEGRIFOLIA, James. 51. THELYPODIUM (PACHYPODIUM, Nutt.) INTEGRIFOLIUM, Torr. and Gray.

CAPPARIDACEÆ.

52. CLEOME INTEGRIFOLIA, Torr. & Gray. 53. CLEOMELLA TENUIFOLIA, Torr.

VIOLACEÆ.

54. VIOLA BIFLORA, L. 55. V. NUTTALLII, Pursh. 56. V. MUHLENBERGII, var. *pubescens*, same as 108 of Parry. 57. IONIDIUM LINEARE, Torr.

PARNASSIEÆ.

575. PARNASSIA PARVIFLORA, DC., Hook. Two forms of the species, into which *P. Kotzebuei*, Cham., probably passes. It is No. 427 of Dr. Parry. 578. P. FIMBRIATA, Banks; a small form of the species; the flowers only half the size of those of the ordinary state. It is No. 428 of Parry's separate collection.

HYPERICACEÆ.

58. HYPERICUM SCOULERI, Hook., which apparently is also *H. formosum*, HBK.

ELATINACEÆ.

59. ELATINE AMERICANA, Arn. On the Platte River. (60. See Primulaceæ.)

CARYOPHYLLACEÆ.

61. SILENE SCOULERI, Hook. 62. S. DRUMMONDII, Hook. 63. LYCHNIS APETALA, L. vars., same as 132 and 133 of Parry. 64. SILENE MENZIESII, Hook. 65. SILENE ACAULIS, L.

66. PARONYCHIA PULVINATA, n. sp.,† the same as Parry's 297, of which he also has collected very fine specimens this year. 67. P. JAMESII, Torr. and Gray. 68. SAGINA LINNÆI, Presl. 69. ARENARIA (ALSINE) ROSSII, R. Br., the taller stems 3–5-flowered, pretty clearly a mere arctic-alpine form of A.

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* VESICARIA MONTANA (sp. nov.): argenteo-incana: caulibus e radice perenni diffusis foliosis; foliis spathulatis, radicalibus subovatis petiolatis nunc 1–2-dentatis; racemo fructifero elongato; silicula ovali seu ellipsoidea cano-pubescente stylo gracili longiore pedicello patente sursum curvato paullo breviore. Habit of *V. Ludoviciana*, *argyræa*, and *argentea*; well-marked by the oval or oblong silicle (which is, in some specimens, 3 lines in length, but of scarcely half that breadth, while in others it is shorter and broader, barely oval in outline,) hoary, with a fine stellular pubescence, one-third longer than the style, commonly one-third or one-half longer than the pedicel, nearly terete; the valves of the same rather firm texture as those of *V. Ludoviciana*, more convex than those of *V. alpina*. Seeds four or six in each cell, wingless. Petals spatulate, light yellow. Filaments filiform.

† PARONYCHIA PULVINATA (sp. nov.): depressa, e caudice lignescente pulvinato-cæspitosa, fere glabra; stipulis argenteis ovatis integris muticis folia oblonga obtusa margine ciliolato-scabra subæquantibus cum iis ramos breves usque ad florem terminalem sessilem dense vestientibus; calycis segmentis ovalibus late scariosis sub apice cucullato aristulatis, aristula cucullum vix superante. In the high alpine region, quite common. Forming dense, cushion-like tufts, apparently like those of *Silene acaulis*, denser than those of *P. sessiliflora*, Nutt. Stipules 2 lines long, broadly ovate and obtuse, or the uppermost somewhat taper-pointed or acute, but muticous. Leaves 2½ or 3 lines long, about a line wide, bright green, flat, thick, very obtuse and muticous, nerveless. Flower solitary and immersed among the leaves. Staminodia 5, similar to the fertile filaments. Ovary glabrous, tapering into the rather short style.

uliginosa, Schleich, (*Alsine stricta*, Wahl.) 77. A. ARCTICA, Stev., the same form as Parry's 141; and with it specimens of *A. biflora*, Wahl., var. *carnulosa*, Fenzl., with flaccid procumbent stems, and longer, lax, falcate leaves. If forms of the same, then *A. arctica* and *biflora* are properly united by Dr. Hooker. 79. A. FENDLERI, Gray.

70. STELLARIA UMBELLATA, Turcz.? An ambiguous form, of the alpine region, with the capsules, seeds, and scarious bracts of *S. longifolia*, but with oblong, flaccid leaves, and petals wanting.* 73. From middle elevations, is a form of the same, without fruit. *S. alpestris*, var. *paniculata*, Fries, Herb. Norm., is perhaps the same, or a form connecting it with *S. longifolia*, but his *S. alpestris* var. *aliflora* is *S. borealis*. 71 and 76. S. LONGIPES, Goldie. 72. S. BOREALIS, Bigel., except the depauperate young specimens intermixed, which are the same as 70. 78. S. JAMESII, Torr. 74. MŒHRINGIA LATERIFLORA, Fenzl. 75. CERASTIUM ARVENSE, L., mixed with C. *vulgatum*? var. *Behringianum*, or *alpinum*, just as was Parry's No. 138 last year. (80. See under Scrophulariaceæ.)

PORTULACACEÆ.

81. TALINUM PARVIFLORUM, Nutt., or perhaps *teretifolium*, as the specimens are only in fruit. 82. CLAYTONIA VIRGINICA, L., from the alpine region. 83. C. ARCTICA? var. *megarhiza*, Gray, Enum. Pl. Parry (*C. megarrhiza*, Parry); specimens smaller than last year. 84. CLAYTONIA CHAMISSONIS, Esch. (*C. aquatica*, Nutt.); more luxuriant than the plant of Unalaschka, but otherwise similar: petals rose-color. (Dr. Parry again collected TALINUM PYGMÆUM, Gray, his No. 143.)

MALVACEÆ.

85. SIDALCEA CANDIDA, Gray. Cold springs, &c., on Blue River.† 86. MALVASTRUM COCCINEUM, Gray.

LINACEÆ.

87. LINUM PERENNE, L.

GERANIACEÆ.

88. GERANIUM RICHARDSONII, F. & M., the same as 112 of Parry. 89. G. FREMONTII, Torr., var. *Parryi*, Engelm., the same as Parry's 113, the fruiting pedicels divaricate!

RHAMNACEÆ.

90. CEANOTHUS FENDLERI, Gray. 91. C. OVATUS, Desf.

CELASTRACEÆ.

92. PACHYSTIMA MYRSINITES, Raf.

SAPINDACEÆ (ACERACEÆ.)

93. ACER GLABRUM, Torr., the ordinary form of the species.

LEGUMINOSÆ.

94. LUPINUS PUSILLUS, Pursh. 95. L. ORNATUS, Dougl.: "abundant at low and middle elevations." Very ornamental. 96. L CÆSPITOSUS, Nutt., probably a form of *L. aridus*, Dougl. The keel is slightly ciliate. It was found "on Blue River, west of the range." 97. TRIFOLIUM DASYPHYLLUM, Torr. and Gr. Still finer and larger specimens than last year. 98. T. PARRYI, Gray, Enum. Pl. Parry.‡ 99. T. NANUM, Torr. 100. DALEA LAXIFLORA, Pursh.

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* Dr. Parry also separately collected it, in fine fruiting specimens, in subalpine woods, on Mad Creek, &c., No. 431.

† This rare species was separately collected in Middle Park, by Dr. Parry. It is his No. 429. SIDALCEA MALVÆFLORA, Gray, (*S. Neo-Mexicana*, Gray,) Parry's 430, was collected with the last.

‡ TRIFOLIUM LONGIPES, Nutt. Sparingly collected by Dr. Parry in Middle Park, and distributed as his No. 434.

101. PSORALEA LANCEOLATA, Pursh. 102. P. FLORIBUNDA, Nutt. 103. P. ARGOPHYLLA, Pursh. 104. DALEA ALOPECUROIDES, Willd. 105. PETALOSTEMON MACROSTACHYUS, Torr. 106. ASTRAGALUS KENTROPHYTA (*Kentrophyta montana*, Nutt.) 107. THERMOPSIS RHOMBIFOLIA, Nutt. (the smaller plant and the fruit), and apparently T. FABACEA, var. *montana*, Gray (*T. montana*, Nutt.): the latter should be known by its taller stems, larger leaflets, and narrow, linear, pubescent, erect legumes. 108. HOSACKIA PURSHIANA, Benth. 109. LATHYRUS ORNATUS, Nutt., and a pubescent variety. 110. L. LINEARIS, Nutt. 111. L. POLYMORPHUS, Nutt. 112. L. PALUSTRIS, var. *myrtifolius?* a small portion, and mainly VICIA AMERICANA, Muhl. 113. ASTRAGALUS RACEMOSUS, Pursh. 114. A. (PHACA, Hook.) BISULCATUS, Gray; in fruit. 130. Same in flower. 115. A. (PHACA, Hook.) NIGRESCENS, Gray. 116. A. (PHACA, Hook.) GLABRIUSCULUS, var. *major*, foliolis anguste oblongis. Very likely, as Hooker conjectured, a form of *A. aboriginum*. A narrow, membranous, rudimentary false septum is borne on the dorsal suture, in the manner of *A. Robbinsii* and *A. alpinus*, to which, indeed, the species is related. It was collected in the mountains, "at middle elevation; not common." 117. A. OROBOIDES, Hornem. (*Phaca elegans*, Hook.) "Along the bank of streams, at middle elevations, and subalpine." Very fine specimens, both in flower and in fruit; the former with linear leaflets, like the original *P. elegans*; the latter with broader and glabrate leaflets, just like Bourgeau's specimens from the Saskatchawan. 118. A. FLEXUOSUS, Dougl. (*Phaca flexuosa* and *P. elongata*, Hook.) Legumes straight or slightly curved. "Low mountains and plains; common." 119. A. GRACILIS, Nutt. With the last. 121. A. near *Phaca debilis*, Nutt., but larger in all its parts. To be determined hereafter in a general revision of the species.* 122. A. MOLLISSIMUS, Torr., of which the stipules were wrongly described, a form with silvery instead of yellowish pubescence. Fine specimens, same as Parry's 184, doubtfully compared with *A. glareosus*, still without fruit. "On the plains; scarce." 123. A. PARRYI, Gray; now collected with ripe legumes, which are so obcompressed and sulcate both sides that the sutures meet. "Common both on the low mountains and subalpine." 124. A. DRUMMONDII, Hook. 125. A. ALPINUS, L. "From middle elevations to truly alpine." 126. A. CYANEUS, Gray, Pl. Fendl. Specimens more luxuriant than Fendler's; the leaflets oval, half to two-thirds of an inch long, and young pods nearly two inches long. This is likely to be *A. Shortianus*, Nutt., of which I have seen no specimens; but the flowers are deep blue. "Low mountains, and rarely subalpine; a fine species." 127. A. MISSOURIENSIS, Nutt. 128. A. SPARSIFLORUS, n. sp., to be elsewhere characterized in a revision of the North American species. "On low mountains; rare." 129. Perhaps a variety of the last, with more numerous flowers and larger legumes. 141. A. (PHACA) PAUCIFLORUS, Hook.? A glabrate, slender form, the same as *Phaca pauciflora*, Nutt. "South Park, common, apparently a good forage plant." (Fendler's, No. 144 is the same.) 130. A. (PHACA) BISULCATUS, Gray, in flower. 131. A. (PHACA) LOTIFLORUS, Hook., very fine specimens in flower and fruit. 132. (fruit) & 133. (fl.) A. CARYOCARPUS, Ker. 134. A. (PHACA, Hook.,) PECTINATUS, Gray. 136. A. STRIATUS, Nutt.! 137. A. (PHACA, L.) FRIGIDUS, with perfectly glabrous legumes, as in other American specimens. "Subalpine, in wet pine-woods." 138. A. (PHACA) FILIFOLIUS, Gray, in Pacif. R. R. Exped. *Phaca longifolia*, Nutt. 139. A. HYPOGLOTTIS, L. 145. A. (OROPHACA) SERICOLEUCUS, Gray (*Phaca sericea*, Nutt.); charming specimens of an interesting plant. 142. HOMALOBUS DECUMBENS, Nutt. Also 435 of Parry, very sparingly collected. Its name as an *Astragalus* can be settled only upon a revision of the species. 120. (and 433 of Parry,) OXYTROPIS DEFLEXA, DC. 135. O. SPLENDENS, Dougl.; worthy of the name. 140. O. LAMBERTI, Pursh, with purple or blue, and with white

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* The name *Astragalus debilis* could properly be retained for *Phaca debilis* of Nuttall. For there is no *A. debilis* of Douglas; that so given in Walp. Repert. 1, p. 710, being an accidental error for *A. miser*, Dougl.

flowers; "very ornamental and very variable." 143. O. ARCTICA, R. Br. "High alpine." 144. O. MULTICEPS, Nutt. in Torr. and Gray, Fl. (*Physocalyx multiceps*, Nutt. in herb. Acad.) "Subalpine and lower." This is Dr. Parry's No. 191, which I wrongly referred to *O. nana*, Nutt. The plant is more dwarf and the leaflets much smaller than in Nuttall's specimens, which are in fruit only, while ours, last year in blossom only, now show the young fruit in the bladdery calyx. It is a very pretty plant. 146. SOPHORA SERICEA, Pursh. 147. GLYCYRRHIZA LEPIDOTA, Nutt.

ROSACEÆ.

148. PRUNUS (CERASUS) PENNSYLVANICA, L. 149. SPIRÆA DUMOSA, Nutt. 150. S. OPULIFOLIA, L., var. *parvifolia*. 151. SIBBALDIA PROCUMBENS, L. 152. GEUM (SIEVERSIA) TRIFLORUM, Pursh. 156. G. (SIEVERSIA) ROSSII, Ser. 153. DRYAS OCTOPETALA, L. 154. POTENTILLA FISSA, Nutt. 155. P. FRUTICOSA, L. 157. P. CONCINNA, R. Br. 158. P. PENNSYLVANICA, L., var. *Hippiana*, Torr. and Gray. 159. P. FASTIGIATA, Nutt. ? which specimens of Parry's, in 1861, (with 217) ally to large states of *P. nivea*. (A glabrate specimen intermixed, is the same as Parry's 218, *P. Drummondii*, &c., Lehm.) 160. P. NIVEA, L., a form with the leaflets more deeply incised than in 215 of Parry. 161. P. PLATTENSIS, Nutt. ? the leaves more dissected, so as to be almost bipinnately parted; the same as a plant of Bourgeau's collection, from the Saskatchawan. "Common in wet ground; spreading." 162. P. PENNSYLVANICA, L., var. *strigosa*, Pursh, with some of the coarser No. 158, perhaps accidentally mixed. 163. RUBUS DELICIOSUS, James; the same as Parry's 210, with large white petals. This will be very ornamental in cultivation. 164. RUBUS TRIFLORUS, Richards., in fruit. 165. CERCOCARPUS PARVIFOLIUS, Nutt.* 462. CHAMÆRHODOS ERECTA, Bunge.

ONAGRACEÆ.

166. EPILOBIUM PALUSTRE, L. 167. E. ALPINUM, L. 168. E. PANICULATUM, Nutt. 169. E. LATIFOLIUM, L. 170. E. ANGUSTIFOLIUM, L. 171. GAYOPHYTUM RACEMOSUM, Torr. and Gray, with a specimen of 168 intermixed in my set. 172. G. RAMOSISSIMUM, Torr. and Gray; the var. *deflexum*, Hook., in Lond. Jour. Bot., 6, p. 224, where the names of the two varieties are transposed. 173. ŒNOTHERA MARGINATA, Nutt. 174. Œ. MISSOURIENSIS, Sims. 175. Œ. TRILOBA, Nutt. 176. Œ. NUTTALLII, Torr. and Gray, (*Taraxia longiflora* and *breviflora*, Nutt., the specimens belonging to the latter form), South Park. 177. Œ. PINNATIFIDA, Nutt. (see Parry, Enum., p. 40 (333), the hirsute specimen, which is just Parry's 116, and a canescently puberulent specimen, which, from its obcordate petals, should also be of this species, but not in fruit. 178. Œ. CORONOPIFOLIA, Torr. and Gray, exactly No. 222 of Fendler's collection. 179. Œ. SERRULATA, Nutt. 180 (and 436 of Parry). GAURA PARVIFLORA, Dougl. 181. GAURA COCCINEA, Nutt. 182. HIPPURIS VULGARIS, L.

LOASACEÆ.

569. MENTZELIA (BARTONIA) NUDA, Torr. & Gray. 570. M. (BARTONIA) MULTIFLORA, Nutt.; the form with cylindrical capsules. 571. M. ALBICAULIS, Dougl., (Parry's 126,) and some M. OLIGOSPERMA, Nutt.

CACTACEÆ.

183. OPUNTIA MISSOURIENSIS, DC., with a red flower also in my set, probably of O. RUTILA, Nutt.

GROSSULARIACEÆ.

184. R. LACUSTRE, Poir, var. (*R. setosum*, Dougl.) 185. R. LEPTANTHUM, Gray, Pl. Fendl. 186. R. CEREUM, Dougl. 187. R. HIRTELLUM, Michx. 188. R. AUREUM, Pursh.

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* PURSHIA TRIDENTATA, DC., is No. 432 of Dr. Parry's separate collection, from Middle Park.

CRASSULACEÆ.

189. SEDUM RHODANTHUM, Gray, Enum. Pl. Parry. In fruit; the inflorescence a dense spike-like thyrsus, oblong. 190. S. STENOPETALUM, Pursh. 191. S. RHODIOLA, L. (192. See Borraginaceæ.)

SAXIFRAGACEÆ.

193. SAXIFRAGA NIVALIS, var.? An undeveloped specimen of this, in Parry's collection of 1851, was referred to *S. hieracifolia?* But the well-developed specimens appear to pass into the large state of the next. The limits between *S. nivalis*, *Virginiensis* and *integrifolia* are not obvious. 194. S. NIVALIS, L., one form the same as Parry's 169; the other has a scape nine inches high, bearing several peduncled erect flower-clusters in a racemose manner, just as in 193, from which it differs in its shorter and smaller, more-toothed leaves. 195. S. CERNUA, L. 196. S. CONTROVERSA, Sternb., referred by several authors to *S. adscendens*, L. Alpine region; before found in America only by Bourgeau, in the Rocky Mountains further north; known in Northern Asia. 197. S. BRONCHIALIS, L. 198. S. DEBILIS, Engelm. n. sp.* "Alpine." 199. S. SERPYLLIFOLIA, Pursh; but probably only a high alpine, very dwarf and tufted variety of *S. Hirculus*, L., this being the view taken of it in the Enumeration of Parry's collection of 1861, No. 164. The characters hold out in the present collection. 201. S. HIRCULUS, L., in the ordinary form, as different from 199 as possible. "South Park, in wet or swampy places." 200. S. FLAGELLARIS, Willd. (202. See under Primulaceæ.) 203. S. JAMESII, Torr., from the original stations. A most rare and peculiar species. 207. S. PUNCTATA, L. (*S. æstivalis*, Fisch.) 204. HEUCHERA PARVIFOLIA, Nutt., the large form,—viz.: Parry's 174,—with some specimens passing to Parry's 173, the small form. 205. HEUCHERA BRACTEATA,† Seringe (*Tiarella? bracteata*, Torr.,) the same as Parry's 172, mixed with a large-flowered, apparently new species, H. HALLII.‡ Rocks, on mountains of medium elevation. 206. LITHOPHRAGMA PARVIFOLIA, Nutt. 208. MITELLA PENTANDRA, Hook.; in fruit. 576. CHRYSOSPLENIUM ALTERNIFOLIUM, L. 568. JAMESIA AMERICANA, Torr. & Gray. (209. See Euphorbiaceæ.)

UMBELLIFERÆ.

210. CYMOPTERUS GLOMERATUS, DC. A plant rarely collected, but said to be very common on the plains, along with the next. 211. C. MONTANUS, Nutt. 213. C. ALPINUS, Gray, Enum. Pl. Parry, p. 19 (408,) No. 158; with good fruit as well as flowers. 212. PEUCEDANUM NUDICAULE, Nutt.? at least the plant so named in Hayden's collection on the *Mauvaises Terres* of Nebraska; but the plant is minutely pruinose-pubescent, not glabrous, nor is the fruit truly that of a *Peucedanum*, the marginal wings being double, nor from the description can it be the original *Smyrnium nudicaule* of Pursh. It must re-

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* This was mixed with No. 167 (S. CERNUA, L.) of Dr. Parry's collection in 1861, but very sparingly distributed. It has a granulate root, so called, and the foliage much as in *S. Sibirica*, but is perfectly glabrous throughout, and with the obconical tube of the calyx wholly adnate to the ovary. As it is manifestly related to *S. rivularis* (though quite distinct), I suppose it may be the "*S. Cymbalaria*, vel. n. sp.," or the species compared with *Sibirica*, of Chamisso in Linnæa, 6, p. 555, which in the Flora Rossica are doubtfully referred to *S. rivularis*. In which case I know of no name to take precedence of this proposed by Dr. Engelmann.

† HEUCHERA BRACTEATA (Seringe): glabella, minutissime pruinoso-glandulosa; thyrso denso spiciformi multifloro; bracteis sæpe flores flavido-virescentes subæquantibus; calyce oblongo fere ad medium 5-fido, lobis spathulato-oblongis; petalis attenuatis acutis filamentis vix latioribus; staminibus stylisque dein exsertis. Scape from a span to nearly a foot in height, often foliose-bracteate. Thyrsus commonly more or less secund. Flowers barely two lines in length. Teeth of the leaves usually setaceously mucronate.

‡ HEUCHERA HALLII (sp. nov.): hirsutula; thyrso racemiformi sublaxo 16–30-floro; bracteis pedicellos vix superantibus; floribus albidis (nunc roseo tinctis?); calyce lato-campanulato 5-lobo, lobis lato-ovatis; petalis spathulatis obtusis exsertis; staminibus stylisque inclusis. Scapes usually a span high. Flowers about three lines long, but the calyx twice the breadth of that of *H. bracteata*, and very different in shape. Pedicels, when fully developed, sometimes nearly as long as the flower. Leaves as in the preceding species, considerably variable.

main uncertain until the order is revised. A solitary fruiting specimen in Dr. Parry's collection of 1861 was very carelessly named *Leptotænia dissecta*, which is quite a different plant. 214. Musenium trachyspermum, Nutt.; near *M. divaricatum*, but the young fruit much shorter as well as more scabrous. 215. Thaspium trachypleurum, n. sp.,* in fruit, the same as 159 of Parry in 1861, of which the fruit was too young. It proves to be quite different from that of *T? montanum*, var. *tenuifolium*. The genus is uncertain; but it can hardly be well separated from *Thaspium*. 217. T. montanum, Gray, Pl. Fendl., in flower and in fruit, the latter with the three dorsal wings sometimes barely salient, sometimes as much developed as the marginal ones. 216. Conioselinum Fischeri, Wimm.; "alpine and subalpine." 218. C. Canadense, Torr. and Gray, probably a larger and coarser form of 216; "on low mountains." 219. Archangelica Gmelini, DC. 220. Archemora Fendleri, Gray, Pl. Fendl.; fine, large specimens with good fruit, "in subalpine woods." It is 155 of Parry's 1861 collection, which I carelessly named *Berula angustifolia*. 221. An acaulescent Umbellifer, undeterminable for the want of fruit. 222. Cymopterus? anisatus, n. sp., called "*C. terebinthinus*, var. *fœniculaceus*" in Parry's 1861 collection (No. 157); but it can hardly be either of Nuttall's species under those names, on account of the very long and subulate leaflets of the involucel as well as calyx-teeth, yet apparently related to them; the foliage, &c., very similar. Mature fruit not collected; some of the present collection pretty well formed has the wings abortive, while in younger fruits of 1861 these are obvious and somewhat undulate. This dubious plant inhabits "dry hills in the middle mountains, and is a very aromatic herb." The foliage of the dried specimens and the fruit have a pleasant anisate flavor,—characters unknown in the polymorphous genus *Cymopterus*, and rendering the genus of this plant yet more doubtful.

ARALIACEÆ.

223. Adoxa Moschatellina, L. "Subalpine; common."

CORNACEÆ.

Cornus Canadensis, L. In the mountains Dr. Parry gathered one or two specimens of the ordinary form of this species; and in the alpine region also a depauperate form of it, some specimens of which, having a pair of leaves lower down on the stem, and those from the upper axils small, might readily be mistaken for *C. Suecica*. They are distributed as No. 437 of Parry.

CAPRIFOLIACEÆ.

224. Linnæa borealis, Gronov. 225. Symphoricarpus montanus, HBK. 227. S. occidentalis, R. Br. 226. Lonicera involucrata, Banks. 228. Viburnum pauciflorum, Pylaie.

RUBIACEÆ.

229. Galium boreale, L. 230. G. trifidum, L., the reduced, northern form, near *G. palustre*.

VALERIANACEÆ.

231. Valeriana dioica, L., var. *V. sylvatica*, Richards.

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* Thaspium trachypleurum (sp. nov.): glabrum; caule (pedali) striato 1–3-foliato umbellas 2–3 longiuscule pedunculatas gerente; foliis ternato-decompositis, segmentis filiformibus mucronulatis, petiolis basi dilatatis haud scarioso-marginatis; involucro et involucello e foliolis 1–3 subulatis parvis; floribus flavis; fructu didymo-ovato lateraliter compresso, mericarpiis sectione transversali fere orbiculatis, jugis alisve 5 conformibus crassis suberosis obtusissimis scabris cum uno commissurali a carpophoro demum libero, valleculis omnibus grosse univittatis. On the mountains, at middle and lower elevations. Leaves more decompound than in the *T. montanum* var. *tenuifolium*, with which I had confounded it the segments shorter and more rigid; the fruit shorter, 1½ to 2 lines long, the mericarps not at all flattened dorsally, in shape and scent like those of *Thaspium*, and the short wings remarkably thick and corky, scabrous-roughened. A similar corky mass at the commissure in the section simulates another wing or rib, except that it is partly divided by a groove, which receives the carpophore.

COMPOSITÆ.

232. Erigeron acre, L. 233. Diplopappus ericoides, Torr. and Gray. 234. Erigeron compositum, Pursh. 235. E., a species wholly doubtful to me, with deep purple or blue rays,—except in this respect the same as the white-rayed specimens of Parry's No. 3, which I had confounded with those of *E. uniflorum*, with which it was mixed. I dare not now venture to describe it as a new species. 236. E. glabellum, var. *pubescens*, Hook. Bourgeau collected the same form in the Rocky Mountains. 237. E. divergens, Torr. and Gr. 238. E. grandiflorum, Hook., var. *elatius*, Gray, Enum. Pl. Parry, No. 1: a still more luxuriant plant ; stems more than a foot high, leafy to the summit, bearing two to four heads, with the same very woolly involucre. 243. E. uniflorum, L., both the same as Parry's No. 8, and large and tall forms 6 to 9 inches high, with light-colored long wool to the involucre, as in the foregoing. "Common in the high alpine region." 239. E. glabellum, Nutt. ? var. *molle*. This is recorded as a common species at all heights. But I have never before seen such a form, except one of Bourgeau's, the largest specimens distributed under "*E. canescens*," and that has white rays. From the shape of the leaves, and their size and abundance up to the summit of the stem, this should rather be referred to *E. macranthum;* but the pubescence is strange for that species. 240. E. glabellum, Nutt. Parry's No. 4 (collected again) is a dwarfer form of the same, and belongs rather to *glabellum* than to *E. macranthum*. (241, 242. See below, under Aster. 243. See above.) 244. E. cæspitosum, Nutt. ; a strict form, near the var. *grandiflorum*,—of which *E. canum*, Gray, Pl. Fendl., is evidently a form. "Common on low mountains." 245. E. pumilum, Nutt. 246. E. Bellidiastrum, Nutt.

247. Solidago lanceolata, L. 248. S. nemoralis, L. ; a dwarf, subalpine form, passing to *S. nana*, Nutt. 249. S. Missouriensis, Nutt. ; a dwarf form. 250. S. Virga-aurea, L. ; two forms. 251. S. Virga-aurea, var. *multiradiata*, Torr. and Gray. Dr. Parry collected one specimen of *S. humilis* on Clear Creek.

241. Aster salsuginosus, Richards. "Subalpine." This is also 403 of Dr. Parry's separate collection. 242. A. glacialis, Nutt. "In the high alpine region." 252. A. adscendens, Lindl., var. *ciliatifolius*, Torr. and Gray, (which is also 419 of Parry,*) and the var. *Fremontii*, Torr. & Gray, Fl. Suppl. 253. Various forms of the last, "alpine and subalpine, in low grounds," the larger ones (same as Parry's 417) passing towards *A. integrifolius*, Nutt., but the involucre not manifestly glandular. All the peculiar Asters of the Rocky Mountains and westward require complete re-elaboration. 254. (also 418 of Parry,) A., near the smooth form of ericoides, L., and probably a variety of it, but with laxer and narrower scales to the involucre. The rays are pinkish, as they sometimes are in the eastern plant. "In the mountains, at middle elevations."

255. Aplopappus inuloides, Torr. and Gray. Subalpine, in the South Park. 256. A. (Stenotus) pygmæus, Gray, Enum., Pl. Parry, mixed with specimens of an equally dwarf new species, which Dr. Lyall collected, in 1860, on the summits of the eastern side of the Cascade Mountains, at 7500 hundred feet above the sea. It should therefore be named A. Lyalli.† Both high alpine.

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* Aster (Orthomeris) glaucus, Torr. and Gray, not in the general collection, is again in Parry's separate collection (No. 13). in the finest state.

A. Fendleri, Gray, Pl. Fendl. (perhaps a hispid form of *A. Nuttallii*,) was sparingly collected on sand hills, on the plains, but not distributed.

† Aplopappus Lyalli (sp. nov.): nanus, undique pruinoso-glandulosus; caulibus 2–3-pollicaribus foliosis monocephalis; foliis integerrimis submembranaceis sæpius mucronatis, radicalibus inferioribusque oblongo-spathulatis seu oblanceolatis basi attenuatis, summis lanceolatis; involucri squamis laxe imbricatis subtriseriatis lanceolatis subæquilongis glanduloso-puberis; ligulis 16–20 linearibus longiusculis: acheniis linearibus fere glaberrimis; pappi albi setis rigidulis corollam disci æquantibus. Forma α. (Lyalli) ; involucri squamis omnibus lanceolatis sensim acuminatis,

257. A. (Pyrrocoma) croceus, n. sp.[*] Subalpine, in the Middle Park, &c., west of the Rocky Mountain range. 258. A. (Pyrrocoma) Fremontii. *Pyrrocoma foliosa*, Gray in Jour. Bost. Nat. Hist. Soc., 5, 1843. Low mountains, lat. 39°. There is a Chilian *A. foliosus;* wherefore, in suppressing *Pyrrocoma* as a genus, the name of this most rare and well-marked species may very properly commemorate the discoverer. 259. A. (Pyrrocoma) Parryi, Gray, Enum. Pl. Parry. 260. Chrysopsis villosa, Nutt., with the dwarf variety, *C. hispida.*

261. Iva axillaris, Pursh; a broad-leaved form. 262. I. ciliata, Willd. 263. Euphrosyne (Cyclachæna) xanthiifolia, Gray. 264. Franseria tomentosa, Gray, Pl. Fendl. 265. F. Hookeriana, Nutt.

266. Lepachys columnaris, Torr. & Gr. 267. Gaillardia aristata, Pursh. 268. Helianthella uniflora, Torr. and Gr. Fine specimens. The achenia are ciliate with very long hairs; the awns are long, slender and persistent.[†] 269. Helianthus pumilus, Nutt.? Parry's No. 50. 270. H. petiolaris, Nutt. 271. (& 420 of Parry.) Heliomeris multiflora, Nutt.; the broader-leaved form. 272. Helenium Hoopesii, n. sp., a most striking species, seeds of which were collected near Pike's Peak in the autumn of 1859, by Mr. Thomas Hoopes, from which plants were raised by Mr. Halliday Jackson, of Westchester, Pa.[‡] 273. Actinella grandiflora, Torr. and Gr.; equally fine specimens as those of last year. 274. Actinella Richardsonii, Torr. and Gr. 275. A. scaposa, Nutt. var. (*A. glabra*, Nutt.) 276, 277. A. acaulis, Nutt., in different forms. 278. Bahia oppositifolia, Torr. and Gr. 279. Thelesperma (Cosmidium) gracile, Gray. 280. T. filifolium, Gray. 281. Villanova chrysanthemoides, Gray. 282. Hymenopappus tenuifolius, Pursh. 283. Chænactis achilleæfolia, Hook. Arn.; a low form from the alpine region. 284. C. achilleæfolia, var.

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exterioribus paullo brevioribus; foliis parvulis, caulinis superioribus gradatim minoribus (6–3 lin. longis) acutioribus. β. Halli: involucri squamis plerisque latioribus, extimis oblongo-linearibus discum adæquantibus; foliis etiam caulinis magis spathulatis, summis pollicaribus capitulum adæquantibus, radicalibus bipollicaribus. Head half an inch long and wide. Ligules exserted, 3 or 4 lines long. Appendages of the style in the disk-flowers oblong-lanceolate. Ovaries in Hall and Harbour's plant sparsely beset with a few slender hairs; in Dr. Lyall's glabrous.

[*] Aplopappus (Pyrrocoma) croceus (sp. nov.): caule ultrapedali parce foliato monocephalo primum lanoso; foliis coriaceis glabris integerrimis haud eximie reticulatis, radicalibus oblongo-lanceolatis (cum petiolo pedalibus), caulinis lanceolatis oblongisve basi semi-amplexicaulibus; capitulo nudo maximo; involucri hemisphærici squamis ovalibus obtusissimis muticis, interioribus margine subscarioso-erosis; ligulis 50 et ultra longe exsertis supra croceis; ovariis breviusculis glaberrimis; pappo albido corollam disci adæquante. Allied to *Pyrrocoma radiata*, Nutt., which, however, is probably not distinct from *Aplopappus* (*Pyrrocoma*, Hook.) *carthamoides.* But the leaves are less coriaceous and reticulated; the head naked, peduncled, and I believe nodding; involucre an inch in diameter; the long exserted rays nearly an inch in length; the ovaries far shorter, and the pappus white. But I have this only in flower, and *P. radiata* in fruit.

[†] The following, apparently quite distinct, new species of this genus, was sparingly collected by Dr. Parry in Middle Park, near the foot of Pike's Peak. I have also received a specimen from Mr. Hall. It is distinguished by its small leaves and heads, thin and scarious chaff, and the awnless achenia crowned with hyaline squamellæ, which are resolved into a villous fringe that equals the proper tube of the corolla in length.

Helianthella Parryi (sp. nov.): pedalis, hirsuta; foliis triplinerviis lanceolatis vel radicalibus spathulatis, caulinis superioribus sublinearibus 1-2-pollicaribus; capitulis 2–3 parvulis brevissime pedunculatis; receptaculi paleis tenui-scariosis apice truncato barbulatis; ovariis oblongis (exterioribus sæpius promisse, interioribus superne parce villoso-ciliatis) exaristatis; paleis pappi circ. 4 latis tenuissime hyalinis in villum tubum proprium corollæ adæquantem solutis. Involucre only half an inch long; disk half an inch in breadth; ligules 7 to 9 lines long.

[‡] Helenium Hoopesii (sp. nov.): caule valido tomentuloso sesqui-bipedali oligocephalo; foliis glauco-pallidis crassiusculis punctatis mox glabratis subnervatis integerrimis, radicalibus lanceolato-spathulatis in petiolum brevem alatum angustatis, caulinis oblongo-lanceolatis semi-amplexicaulibus; pedunculis sursum incrassatis; capitulis pro genere maximis; involucri squamis lanceolatis seu linearibus; receptaculo subgloboso; ligulis 20–25 lineari-cuneatis (pollicaribus) cum disco aurantiacis; pappi paleis lanceolato-subulatis enerviis corolla disci paullo brevioribus achenium sericeo-villosum æquantibus. " South Park and west of Pike's Peak." Radical leaves 6 to 11 inches long, tapering into a petiole-like base or flat and winged petiole; the cauline ones successively shorter and more dilated at the base, the uppermost $1\frac{1}{2}$ to 2 inches long. Disk in the wild specimens an inch in diameter, and the numerous orange-yellow rays an inch long. Paleæ of the pappus tapering to a sharp point, but not awned. This species is one of those which go to fill the interval between *Helenium* and *Actinella*, but is clearly of the former genus.

Douglasii, (*C. Douglasii*, Hook. and Arn.) 352. PALAFOXIA HOOKERIANA, Torr. and Gray, with smaller heads.

285. MACHÆRANTHERA TANACETIFOLIA, Nees. (*Dieteria coronopifolia*, Nutt.) 286. GRINDELIA SQUARROSA, Dunal, with larger and with smaller heads. 287. (and 425 of Parry,) APLOPAPPUS RUBIGINOSUS, Torr. and Gr. 288. A. SPINULOSUS, DC. 289. TOWNSENDIA GRANDIFLORA, Nutt. 290. T. SERICEA, Hook.

291. ASTER (OXYTRIPOLIUM) ANGUSTUS, Torr. and Gr. (*Tripolium angustum* and *T. frondosum*, Nutt.) 292. LINOSYRIS (CHRYSOTHAMNUS) GRAVEOLENS, Torr. and Gr.; the form with small heads, and acute and viscid scales of the involucre. It occurs, much better developed, in Parry's separate collection, No. 415.[*] 293 (and 413 of Parry,) L. (CHRYSOTHAMNUS) PARRYI, n. sp.[†] A very distinct species, which is said to abound in the Middle Park, South Park, and all that district; the wonder is that it has not been detected before. The spiciform or racemose and leafy inflorescence, and the large heads with lax and taper-pointed scales, are characteristic. 295. L. (CHRYSOTHAMNUS) VISCIDIFLORA, Torr. and Gr.; the variety with broadish and hispidulous-ciliate leaves (*L. serrulata*, Torr.); again collected also by Dr. Parry, under his number 49. 294 (and 426 of Parry,) GUTTIEREZIA EUTHAMIÆ, Torr. & Gr. 296. MACRONEMA DISCOIDEA, Nutt. "Blue River, west of the Rocky Mountain range." An interesting rediscovery of a very rare plant.

297. PECTIS (PECTIDOPSIS, DC.) ANGUSTIFOLIA, Torr. Gravelly banks of streams.

298. ARTEMISIA ARCTICA, Less. (*A. Norvegica*, Fries); a more hairy form, —the same as Parry's 42, which I wrongly considered as a variety of *A. Richardsoniana*. "Strictly alpine." 299. A. SCOPULORUM, n. sp.,[‡] a "strictly alpine" species, allied to *A. lanata*, and to be compared with *A. heterophylla*, Bess., which, however, is placed in the section *Abrotanum*, while this plant has the woolly hairs of the receptacle as long as the flowers themselves, in which respect it also differs from the very similar *A. Richardsoniana*. 300. A. CANADENSIS, Michx. 301. A glabrous form of the last, with small heads, too near *A. caudata* and some forms of the next. 302. A. DRACUNCULOIDES, Pursh, var. *brevifolia*, and specimens with trifid leaves passing into 301. 303, 305, (also 411 and 412 of Parry). A. LUDOVICIANA, a form with small leaves, and also the var. *gnaphalioides*. 304. A. FRIGIDA, Willd. 306. A. TRIDENTATA, Nutt.[§] "On the Blue River, west of the Rocky Mountain range." 307. A. FILIFOLIA, Torr. (308. See Chenopodiaceæ.)

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[*] No. 414 of Parry's separate collection is a glabrate form of the same common species, of which only traces of the close and white down remain, and the leaves and heads are larger.

[†] LINOSYRIS (CHRYSOTHAMNUS) PARRYI (sp. nov.): fruticosa; ramis virgatis lanoso-dealbatis; foliis linearibus fere glabris subviscosis, floralibus conformibus capitula in thyrsum angustum congesta longe superantibus; involucro 10–15-floro cylindraceo pauciseriali, squamis sublaxe imbricatis albidis lanceolatis, omnibus (exterioribus sæpius folioso- interioribus scarioso-) attenuato-acuminatis; corollæ tubo hirsutulo; acheniis linearibus cano-pubescentibus. Leaves 2 to 3 inches long, 3-nerved, acute, plane, the larger ones 2 lines wide and tapering to the base. Thyrsus narrow, often almost simply racemose or spiciform, sometimes more compound and branchy. Heads about two-thirds of an inch long, foliose-bracteate; the bracts passing into the exterior and leafy-tipped scales of the involucre. Receptacle, styles, viscidity, aroma, &c., as in *Chrysothamnus* generally.

[‡] Also No. 41 of Dr. Parry's separate collection of 1862 (not of 1861, which is *A. borealis*, a very different species.)

ARTEMISIA (ABSINTHIUM) SCOPULORUM (sp. nov.): cæspitosa: rhizomate repente; caulibus simplicissimis spithamæis; foliis albido-sericeis plerisque pinnati–3–5-sectis, segmentis præsertim radicalium tripartitis, lobis cum foliis summis linearibus angustis; capitulis pluribus vel paucis simpliciter racemoso-spicatis breviter pedicellatis erectis (lin. 2–3 latis), involucro hemisphærico. squamis ovalibus extus dorso villosis margine lato scarioso atro-fusco cinctis; lana receptaculi copiosa corollas superne longe pilosas adæquante. Var. MONOCEPHALA; caule 2–3-pollicari capitulo solitario majori terminato; foliis etiam radicalibus simpliciter tripartitis vel partim 5-partitis partim integerrimis linearibus. Stems sericeous-pubescent, sometimes glabrate below. Floral leaves or bracts filiform, linear, entire, the lower surpassing the head. Pedicels a line or a line and a half long, strictly erect. Flowers 30 or more, tipped with purplish.

[§] This is 410 of Parry's separate collection, from Middle Park; and his 409, associated with the above, is A. CANA, Pursh; these two being the *Wild Sage* of Lewis and Clarke.

309. Antennaria Carpathica, var. *pulcherrima*, Hook. A remarkable and leafy-stemmed form.[*] 310. A. dioica, Gærtn., and A. alpina (female, 1-3-cephalous), mixed. Good specimens of *A. alpina* were separately collected on Mount Flora by Dr. Parry, No. 422. 311. Gnaphalium strictum, Gray in Bot. Whippl., Exped. Pacif. R. R. Surv. 4, p. (54) 110; a less strict and many-stemmed form. "Wet places in the mountains." 312. G. decurrens, Ives. "Subalpine; rare."

313 (and 423 of Parry). Brickellia grandiflora, Nutt., var. *minor*: foliis profundius cordatis capitulisque minoribus; involucri squamis acutioribus. 314. Nardosmia sagittata, Hook., var. with very obtuse leaves, connecting with *N. frigida*. "Near Pike's Peak." 315. Liatris punctata, Hook.

316. Senecio lugens, Richards., a typical form, and others belonging to *S. fastigiatus* and *S. exaltatus*, Nutt., but dwarf. "A common and variable species, at all heights and in all situations, flowering from June to September." 326. A dwarf form of the same, nearly Parry's 21, and just Fendler's 477. 325. S. lugens, the downy state, same as Parry's 23, one of the forms of *S. exaltatus*, Nutt. 317. S. amplectens, Gray, Enum. Pl. Parry, p. 11, No. 56, a species which, considering the various forms under which it now occurs, was not very well named. A new specific character is appended.[†] It is a subalpine and alpine species.

318. S. integerrimus, Nutt. A low form; "alpine." 319. S. Soldanella, n. sp.[‡] "High alpine, among rocks; heads generally single." They are solitary in all the specimens I have seen.[§] 320. S. cernuus, Gray, Enum. Pl. Parry, No. 52. "A common species at middle and subalpine elevations." 321. S. Bigelowii, var. *Hallii*.[‖] "Subalpine; heads very drooping, rayless." 322. S. Fremontii, Torr. and Gr. "Alpine;" a well-marked species. Recently collected by Dr. Lyall on the summit of the Rocky Mountains, in lat. 49°.[¶] 323. S. triangularis, Hook., with shorter and finer teeth to the leaves, the

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[*] Antennaria margaritacea, R. Br., var. *subalpina*: caule spithamæo ad subpedalem simplicissimo, corymbo congesto fere capitato. A singular, nearly alpine form, collected only by Dr. Parry, No. 421.

[†] Senecio amplectens (Gray, l. c.): lana floccosa mox decidua glabratus; caule semi-sesquipedali e radice perenni apice nudo 1-3-cephalo; foliis membranaceis oblongis lingulatisve aut repando aut argutissime dentatis nunc sublaciniatis, imis basi angustatis vel in petiolum alatum attenuatis, superioribus sessilibus basi (nunc lata) semi-amplexicaulibus; capitulis in pedunculo gracili nutantibus; involucro calyculato laxo; ligulis linearibus elongatis (1-2-pollicaribus) aureis; acheniis glaberrimis.

Var. taraxacoides (*S. Fremontii*, var.? Gray, Pl. Parry, p. 9, No. 28): vere alpinus, 4-5-pollicaris, monocephalus; capitulo minori minus nutante (ligulis semi-subpollicaribus); foliis omnibus basi attenuatis pl. m. laciniatis. In the high and bare alpine region. This, judging from intermediate forms in Hall and Harbour's collection, must be regarded as a depauperate, alpine variety of *S. amplectens*. Dr. Parry gathered only two or three specimens, like those of the former year.

[‡] Senecio Soldanella (sp. nov.): subcaulescens, nanus, glaberrimus, subglaucus, fere semper monocephalus; radice fasciculato-fibrosa; foliis crassis subtus purpureo tinctis, radicalibus imisque orbiculatis nunc subreniformibus nunc basi trinervata in petiolum longum seu longissimum planum contractis sæpius denticulatis (circiter pollicem diametro), superioribus 1-2 minoribus oblongis spathulatisve petiolo brevi dilatato; capitulo magno (8-9 lin. longo et lato); involucro e squamis lanceolatis scarioso-marginatis 16-20 cum exterioribus 7-9 angustioribus immarginatis laxioribus vel paullo vel dimidio brevioribus; ligulis oblongis 16-18 (flavis circiter 4 lin. longis) discum vix superantibus; acheniis glaberrimis. "On Gray's Peak," Dr. Parry,—who complimented the describer by naming this handsome and most distinct species, *S. Grayi*; but the *S. Greyi*, Hook., f. of New Zealand forbids this.

[§] In Middle Park, Dr. Parry gathered one or two specimens of what appears to be *S. hydrophilus*, Nutt.

[‖] Senecio Bigelowii, (Gray in Bot. Whippl. Exped. Pacif. R. R. Surv. 4, p. (55) 111), var. *Hallii*: foliis fere omnibus lanceolatis cum caule pilis articulatis pubescentibus (demum glabratis), caulinis omnibus sessilibus imisve in petiolum alatum contractis. *S. megacephalus*, Nutt., thus far found only by Nuttall, has a similar pubescence, but more of it, and also on the involucre; the scales of the latter are narrower, the heads are radiate and erect, and the plant is dwarf.

[¶] Senecio Fremontii, (Torr. & Gray, Fl. 2, p. 445): totus glaber; caule simplici vel corymboso-ramoso usque ad apicem folioso (5-15-pollicari); foliis oblongis vel obovato-spathulatis carnosulis plerisque laciniato-dentatis omnibus sessilibus, superioribus pollicaribus vel sesqui-pollicaribus, inferioribus decrescentibus, capitulis solitariis paucisve brevissime pedunculatis erectis; involucro campanulato (semipollicari) parce bracteato; ligulis 10-16 luteis; acheniis puberulis.

var. *β*, Torr. and Gr. Fl., verging towards the next. 324. S. ANDINUS, Nutt.? from the locality (but the heads resemble those of the last, and are of equal size), or an undescribed species, if Nuttall's *S. andinus* is Hooker's *S. serra;* intermediate between the latter and *S. triangularis*. Fremont collected a single specimen of it in his second expedition. 327. S. EREMOPHILUS, Richards. 328. S. LONGILOBUS, Benth., from the plains, with pinnately-parted leaves (Parry's No. 407); with a mountain form, having the leaves all entire and the heads narrow. The latter is the same as Parry's No. 406. The variations of *S. filifolius*, *longilobus*, *spartioides* and *Riddellii*, are now wholly inextricable. 330. S. CANUS, Hook., a form with large heads and the leaves all entire, the same as Parry's No. 20; "alpine and subalpine." 229. S. AUREUS var. *alpinus*, Gray, Enum. Pl. Parry, No. 63. This holds its character; but the heads are sometimes as many as three in a corymb. Different from *S. aureus* as it appears, it is inseparably connected with it through the var. *borealis*. 313. S. AUREUS, var. *alpinus*, *werneriæfolius*,[*]—very peculiar, truly alpine form, which would almost anywhere be regarded as a very distinct new species; but I think it runs into the last and into Wright's 403, &c. These forms all teach that *S. subundus*, DC., and *S. resedifolius*, Less., will also pass into *S. aureus*. Indeed, I know not where the species will stop. 332. S. AUREUS, L.? var. *croceus*. Middle Park, &c. Both Dr. Parry (who has it as No. 405) and Mr. Hall note this as a form of the common *S. aureus* with copper-colored or saffron-colored flowers, and I cannot gainsay it, after reviewing a suite of specimens. Some of Hall and Harbour's specimens, except in the anomalous color of the flowers, very much resemble *S. aquaticus* of the Old World. One form is discoid. 333. S. AUREUS, var. *borealis* and var. *Balsamitæ*, Torr. and Gr.; glabrate or woolly, in various forms. "A common and very variable species, at all localities and heights, except strictly alpine. Some of the specimens are passing to *S. Fendleri*, Gray.

334. ARNICA ANGUSTIFOLIA, Vahl.; broad-leaved forms of *A. alpina*, Læst. "A variable species, from the low middle to the alpine region, flowering early and late." 335. A. MOLLIS, Hook.; "alpine and subalpine." 336. A. CORDIFOLIA, Hook., mixed with some A. LATIFOLIA, Bongard, (which Dr. Parry abundantly gathered in Berthoud's Pass; No. 408 of his collection); the latter known by the sessile cauline leaves, the narrower heads, and the almost glabrous achenia. 337. A. CHAMISSONIS, Less. South Park, &c. Passes into leafy forms of *A. angustifolia*. 338. A. ANGUSTIFOLIA? var. *eradiata*, or perhaps a distinct species. This is Parry's No. 10, resembling some rough-hirsute forms of *A. angustifolia*, approaching *A. mollis*, but the cauline leaves decreasing upwards; and the rayless character holds in the numerous specimens gathered in 1862: the achenia are glabrate, although the ovaries are pubescent. It can hardly be a form of the Californian *A. discoidea;* but it needs farther comparison with that species.[*]

339. CIRSIUM ACAULE, All., var. *Americanum*. "Subalpine; common in wet

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[*] SENECIO AUREUS, L., var. (ALPINUS) WERNERIÆFOLIUS: multicipiti-cæspitosus, primum arachnoideus; foliis radicalibus confertis spathulato-oblanceolatis seu spathulato-linearibus basi attenuatis erectis coriaceis rigidis aveniis integerrimis marginibus sæpissime revolutis mox glabratis (cum petiolo 2–4-poll. longis 2–3 lin. latis); scapo aphyllo, (3–5-pollicari) bracteis paucis subulato-setaceis lana obvolutis instructo corymboso-3–5-cephalo; capitulis, etc., *S. aurei*. The leaves may be likened to those of *Werneria* or of *Culcitium longifolium* or *nivale*.

The following might be thought to be a form of this, or of Wright's 403; but, besides the small leaves, the achenia are papillose-hirsute, instead of perfectly glabrous.

SENECIO THURBERI (sp. nov.); cæspitosus, cano-tomentulosus mox glabrescens; foliis plerisque radicalibus confertis angustissime linearibus basi sensim attenuatis (cum petiolo circiter pollicem longis) rigidulis integerrimis vel obsolete 2–3-dentatis marginibus quandoque revolutis; scapo spithamæo 3–5-cephalo foliis perpaucis subulatis bracteisve instructo; capitulis fere *S. aurei*, sed acheniis crebre papilloso-hirtellis! *S. canus*, var. *pygmæus*, Gray, in Bot. Mex. Bound. p. 103. Santa Rita del Cobre, New Mexico, Prof. Thurber, Dr. J. M. Bigelow.

[†] TETRADYMIA CANESCENS, DC., the form with rather smaller heads and shorter leaves (*T. inermis*, Nutt.), was collected in the Middle Park by Dr. Parry, No. 416.

grounds." Stemless and polycephalous; at least my specimen has four heads nearly sessile on the crown, of equal size with those of the European plant, with which the specimens very well agree, except that the exterior scales of the involucre are all tipped with a manifest spine. Some of the leaves are barely sinuate, as in the common Siberian variety; others are nearly as deeply pinnatifid as in the European plant. 340. C. edule, Nutt. ? so named in Parry's former collection; but very probably not that species. In the lack of certain original materials, and of a complete re-examination, I could not pretend to name the Thistles of the Rocky Mountains, Oregon, &c., and am not disposed to add to the existing confusion. 341. C. "a white-flowered species," between the last and *C. foliosum*, (Hook.) DC., if Bourgeau's plant from the Saskatchawan is rightly named.[*]

343. C. Drummondii, Torr. and Gr. Caulescent and leafy-stemmed, the exterior flowers having a sparingly plumose pappus: certainly very near *C. pumilum*. 342. Echinais carlinoides, Cass., var. *nutans*, DC. "Mountains, at middle elevations, and subalpine; and in fertile, open valleys of Middle Park, where it is very common, and certainly indigenous." I have a specimen of this collected by Mr. Samuels in California, which I had thought probably an introduced plant. But it would appear to be truly American as well as Asiatic. The specimens accord with Schrank's and with De Candolle's figures of the Caucasian and Himalayan plant, although, perhaps, the appendages of the involucral scales are a little more dilated.

344. Mulgedium pulchellum, Nutt. 345. Lygodesmia juncea, Don. 346. Stephanomeria runcinata, Nutt. 347. Lygodesmia juncea, var. ? *rostrata*.[†] "On the plains; Sept.; rare." 348. Crepis runcinata, Torr. and Gr. 349. Hieracium triste, Willd. 350. H. albiflorum, Hook. "Subalpine, west of the range; rare."[‡] 351. Nabalus racemosus, Hook. "South Park; rare;" a low form. 352. See above, p. 66. 353. Crepis occidentalis, Nutt. The same as Parry's 70, omitted accidentally. 354. Troximum glaucum, Nutt., var. foliis dilatatis laciniato-pinnatifidis, segmentis lanceolato-attenuatis. Evidently a form of Parry's 65. Mr. Hall notes that it "flowers in May and the early part of June, on low mountains," and must be different from the next, which flowers two months later in the same localities. 355. Macrorhynchus troximoides, Torr. and Gr. (*Troximon aurantiacum*, Hook.); in a great variety of forms, large and small, from a foot and a half to as many inches in height, with entire, toothed, or laciniate-pannatifid leaves; the size of the heads equally variable, and with yellow, orange, chocolate-colored or purple corollas. "Very variable at all heights, even alpine; flowers in July and August." The full suit of specimens show that to this clearly belongs *Troximon parviflorum* and *T. roseum*, Nutt., and *Macrorhynchus purpureus*, Gray, Pl. Fendl. The fruit, when well developed, is rostrate, with a beak of about equal length with the body of the the achenium. 356. Troximon glaucum, Nutt., var. *dasycephalum*, Torr. and Gr. (*T. taraxacifolium*, Nutt.) "High alpine; seemingly different from any of the above." It is also 424 of Parry's separate collection, from Berthoud's Pass. 357. Taraxacum montanum,

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[*] Cirsium eriocephalum, sp. nov., will be the most appropriate name for the high-alpine Thistle which I mentioned in the Enumeration of Parry's collection, 1861, p. 9, as *C. foliosum*, Hook.? It was again collected in 1862, nearly in single specimens, both by Mr. Hall and Dr. Parry. It is remarkable for the heads of yellow flowers being crowded into a capitate cluster, as large as a man's fist, foliose-involucrate with very spinose bracts, and clothed with long and very soft, implexed, perhaps deciduous wool; the stem a foot or two in height, very leafy; the leaves linear, canescent beneath, pinnatifid, the lobes very short and crowded, armed with slender spines.

[†] Lygodesmia juncea, Don., var. rostrata: acheniis apice rostrato-attenuatis; capitulis sæpe 8–9-floris: foliis angustissime linearibus elongatis (in hisce specim. 3–4-pollicaribus). Heads rather larger than is usual in *L. juncea*; achenia half an inch long, the tapering apex directly contradicting the generic character "not contracted at the apex," as here they may be said to be beaked. Dr. Hayden collected the same form on the Laramie Mountains. The species all need to be defined anew.

[‡] To this belongs Parry's No. 71 of the 1862 collection.

Nutt., a form of *T. palustre*, DC. "In the mountains, at middle elevations, in wet ground; different from *T. Dens-leonis*, which was also met with, truly indigenous." (In the high alpine region were collected a few specimens of another form,—viz.: of a very depauperate *T. lævigatum*, DC.)

CAMPANULACEÆ.

358. Campanula rotundifolia, L., an ordinary form. 359. C. Langsdorffiana, Fischer; excellent specimens of Parry's 266, exhibiting the same characters. It is said to be "very common in the subalpine region and lower, in wet ground." 360. C. uniflora, L. "Pike's Peak; high alpine." 361. C. aparinoides, Pursh, a depauperate form.

ERICACEÆ.

362. Vaccinium myrtillus, L. "Alpine and subalpine;" in flower and fruit, connecting the small-leaved form with the ordinary European plant. 363. V. cæspitosum, Michx. 364. Arctostaphylos Uva-Ursi, Spreng. 365. Gaultheria Myrsinites, Hook. 366. Pyrola secunda, L. 367. P. rotundifolia, L., var. *uliginosa*, Gray. 368. P. chlorantha, Swartz; a small form. 369. P. (Moneses) uniflora, L. 370. Kalmia glauca, L., the very dwarf form from the "high alpine" region. 371. Pterospora Andromedea, Nutt.

PLANTAGINACEÆ.

372. Plantago eriopoda, Torr. (For the synonymy, see Proceed. Amer. Acad., 6, p. 55, note.) 373. Apparently the same species, with hardly any wool at the crown,—which happens in other species. "High alpine, near perpetual snow." 374. P. Patagonica, Lam., var. *gnaphalioides*, Gray.

PRIMULACEÆ.

375. Androsace filiformis, Retz. "Subalpine; not rare."[*] 376. A. septentrionalis, L. "Below the subalpine region and also alpine."[†] 377. A. occidentalis, Nutt. "On the plains." 202. A. Chamæjasme, L. (*A. carinata*, Torr.) High alpine on Pike's Peak, where Dr. James collected it. 378. Primula farinosa, L., var. foliis sessilibus; umbella capitata; calyce cylindraceo tubum corollæ subæquante. *P. dealbata*, Engelm. in litt. But it exactly accords with the left-hand figure of *P. farinosa*, var. *Magellanica* of Hooker's Flora Antarctica (*P. decipiens*, Duby), and with my Antarctic specimens, except that the calyx is perhaps a little longer, and the corolla bluish-purple. Mr. Burke collected the same form on the Rocky Mountains farther north, but with the tube of the corolla a little exserted. Bourgeau collected specimens in the Saskatchawan district, having this elongated calyx-tube along with pedicels of ordinary length. It is interesting thus to connect the Antarctic with the northern forms, by specimens from the Rocky Mountains in about lat. 40°. 379. P. Parryi, Gray, Enum. Pl. Parry, No. 311. "Alpine and subalpine; common." This holds its characters, except that the specimens of 1862 are generally less luxuriant, and the divisions of the corolla less bifid; indeed, in some of those of Dr. Parry's later collection they are barely emarginate; and in a few of them the calyx is very little glandular, and its lobes are ovate-lanceolate. The longer pedicels of the umbel are 1½ to 2 inches, or in fruit even 3½ inches, in length. Capsule short-ovid, half an inch long, slightly shorter than the calyx-lobes. The thick root is said by Dr. Parry to be very

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[*] *Androsace filiformis*, Retz., a Siberian species, of which beautiful specimens are in the collection, is now first recorded as of the American flora. It has, however, long since been collected in the Rocky Mountains by Fremont, in his first expedition (in whose report it was wrongly named *A. occidentalis*, Nutt.); by Burke (ex. Herb. Hook.); and more recently by H. Engelmann, in whose collection it was mistaken for *A. septentrionalis*. From the latter, beyond the characters assigned by authors, it is well distinguished by its almost hemispherical calyx, scarcely if at all angled, and with short and flat, not foliaceous teeth.

[†] Dr. Parry's 313 *a* of 1862, is the high alpine form of this.

fragrant. Seeds of this handsome Primrose were copiously collected, from which we may hope to have the plant in cultivation. 380. P. angustifolia, Torr. 381. Dodecatheon Meadia, L., the same form as Parry's 312. 382. Lysimachia ciliata, L. "Mountains at medium height." 60 and 577. Glaux maritima, *L.*, in flower and in fruit.

LENTIBULARIACEÆ.

580. Utricularia vulgaris, L. ? Without flowers. In a subalpine lake.

OROBANCHACEÆ.

383. Aphyllon fasciculatum, Torr. and Gray.

SCROPHULARIACEÆ.

384. Pentstemon glaber, Pursh; same as Parry's 260. 385. P. acuminatus, Dougl., agreeing with Bentham's character "filamento sterili glabro," which is very rarely the case, but a very narrow-leaved variety, just *P. secundiflorus*, Benth., excepting the glabrous sterile filament. "Mountains at low and middle elevations." 386. P. acuminatus, Dougl., the ordinary form of the region (*P. nitidus*, Dougl., *P. Fendleri*, Gray), Parry's 258. 390. P. acuminatus, Dougl., in some sets the common broad-leaved form, in others a variety with still narrower leaves than Parry's 264, i. e., a form almost exactly passing into *P. cœruleus*, Nutt., the name which may probably have to be adopted for the combined species. "Plains; May." 387. P. humilis, Nutt., taller than Parry's 257, much larger than Nuttall's specimen. "Low mountains, an early and pretty species." Dr. Lyall has recently collected it in lat. 49°, at the elevation of 7000 feet. 388. P. Hallii, n. sp., described in "Revision of Genus Pentstemon," in Proceed. Amer. Acad. 6, p. 70,—which memoir see for remarks on most of these Pentstemons. This is a most beautiful dwarf species, "not uncommon in the alpine region, descending into the subalpine," the rich blue purple flowers large for the size of the plant. Dr. Parry must have overlooked it in 1861 by confounding it with his 259 (*P. glaber*, var. *alpinus*,) which, externally, it much resembles, but its affinities are with a different group. 389. P. albidus, Nutt. "Plains; flowers white." 391. P. confertus, Dougl., var. *purpureo-cœruleus*, Gray, Rev. Penst. (*P. procerus*, Dougl.) A taller form of this, with large radical leaves, was sparingly gathered by Dr. Parry in the Middle Park. 392. P. glaucus, Graham? var. *stenosepalus*, Gray, Rev. Penst. p. 70; the No. 262 of Parry. "South Park and Pike's Peak; alpine and subalpine." 393. P. cæspitosus, Nutt., Gray, Rev. l. c., p. 66. "South Park, at middle elevations." "Near the Upper Platte, first found by Mr. J. Harbour." Parry. A neat and very dwarf species, named by Nuttall, but unpublished, having been confounded with *P. pumilus*. 394. P. pubescens, Soland., var. *gracilis*, Gray, l. c. *P. gracilis*, Nutt. 395. P. barbatus, Nutt., var. *Torreyi*, Gray. 396. P. Harbourii, n. sp., Gray, Rev. Penst. p. 71. "Mount Breckenridge on Blue River, west of the main range, in the high alpine region near perpetual snow." A very distinct and dwarf species, named after its discoverer. 397. Chionophila Jamesii, Benth. High alpine, Pike's Peak, &c. Ripe seed having been collected, we may hope that this most rare and interesting plant may become known in cultivation.

398. Mimulus luteus, L.* 399. M. Jamesii, Torr., var. *Fremontii*, Benth.; apparently a form of *M. glabratus*, HBK. 400. M. floribundus, Dougl. 401. M. rubellus, Gray in Bot. Mex. Bound. p. 116; but the limb of the corolla apparently yellow. "Subalpine; scarce." The same plant occurs in Dr. Lyall's collection on our northwestern boundary, from the Cascade

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* M. luteus, L. var. alpinus; caulibus 3-pollicaribus e basi decumbente vel repente 1-3-floris; foliis plerisque sessilibus subintegerrimis. Alpine region, 135*a* coll. Parry, 1862. Very glabrous. Farther north, Dr. Lyall collected a similar, but puberulent and smaller-leaved variety.

Mountains. 402. COLLINSIA PARVIFOLRA, Nutt. 80. LIMOSELLA AQUATICA, L. Apparently just the European plant. "Low mountains." (403, 404. See Polemoniaceæ.)

405. SYNTHYRIS PLANTAGINEA, Benth. Parry's 254, with a little P. ALPINA, Gray, Parry's 255.[*] 406. VERONICA SERPYLLIFOLIA, L., an elongated form. 407. V. ALPINA, L. 408. V. AMERICANA, Schweinitz.

409. CASTILLEIA BREVIFLORA, Gray, Enum. Pl. Parry, No. 243, and p. (338) 45. *Euchroma*, Nutt. "High alpine." 410. C. INTEGRA, Gray. 411. C. PALLIDA, var. *miniata*, Kunth., Gray, l. c., (often with laciniate leaves,) with a dwarf form of *C. pallida* having purple bracts, Parry's 239.[†] 412. C. PALLIDA, the *C. septentrionalis*, Lindl. 413. ORTHOCARPUS LUTEUS, Nutt. 414. PEDICULARIS RACEMOSA, Benth. "Subalpine; common in pine woods." 415. P. CRENULATA, Benth., in DC. Prodr. "Subalpine and alpine, South Park." This species was known only from very poor specimens collected by Fremont. These are good ones, but of a more dwarf and alpine form; stems only 6 to 9 inches high, glabrate, except some decurrent lines of pubescence; the leaves smaller and narrower. Corolla in the dried specimens of a deep violet-purple. 416. P. CANADENSIS, L. "In the mountains of middle elevation;" not before known in this region. 417. P. BRACTEOSA, Benth. 418. P. PROCERA, Gray, Enum. Pl. Parry, No. 252. 419. P. GRŒNLANDICA, Retz. *P. surrecta*, Benth., varying from 4 to 16 inches high, and also in the length of the beak. 420. P. PARRYI, Gray, Pl. Parry, No. 251. 421. P. SUDETICA, Willd. var. Like the specimens of the preceding year; and Dr. Parry also collected a more dwarf state. "Flowers red." 422. RHINANTHUS CRISTA-GALLI, L., var. *minor*.

LABIATÆ.

423. HEDEOMA HISPIDA, Pursh. 424. H. DRUMMONDII, Benth. 425. MENTHA CANADENSIS, L., var. *glabrata*. 426. SALVIA TRICHOSTEMOIDES, Pursh. Probably a form of *S. lanceolata*, for which Bentham takes it. 427. S. PITCHERI, Torr. 428. MONARDA ARISTATA, Nutt. 429. LOPHANTHUS ANISATUS, Benth. 430. DRACOCEPHALUM PARVIFLORUM, Nutt. 431. SCUTELLARIA RESINOSA, Torr.: pubescent and glabrate forms. 432. S. GALERICULATA, L.

BORRAGINACÆ.

433. ECHINOSPERMUM REDOWSKII, Lehm., and a depauperate, diffuse or procumbent form of ERITRICHIUM CALIFORNICUM, DC. 434. ERITRICHIUM CRASSISEPALUM, Torr. and Gr.; the specimens hispid with rough, spreading hairs, and the acheni granulate, and also a more upright and narrower-leaved species, with pointed and smooth achenia, the same as Fendler's 635, named by Torrey *E. micranthum*, sp. nov., and afterwards in my herbarium referred to *E. angustifolium*, Torr., which it hardly is. I think it is also *Cryptanthus hispidus*, Nutt., ined. 435. E. JAMESII, Torr. Very well marked by the smooth and acute-angled achenia, the section of each just a quadrant of a circle. 436. HELIOTROPIUM (EUPLOCA, Nutt.,) CONVOLVULACEUM, Gray. 192. H. CURASSAVICUM, L. Doubtless indigenous. 437. ECHINOSPERMUM FLORIBUNDUM, Lehm. 438. ERITRICHIUM GLOMERATUM, DC.; a fine virgate form, like Parry's 288, and a form with shorter and more branched inflorescence. (439, see Hydrophyllaceæ.) 440. E. ARETIOIDES, DC. Beautiful specimens, like those of Parry's 278 in 1861; some of them Aretia-like, and only an inch high; others with elongated flowering stems two inches high. While

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[*] The latter, again copiously collected by Dr. Parry, in the high alpine region, holds its characters. (The leaves are sometimes rotund-ovate and manifestly cordate.) But a suite of specimens supplied by Mr. Hall shows gradations between the two.

[†] Parry's 240. again sparingly collected in the alpine region, is a similar form of *C. pallida*, with a short galea and bright red bracts, occasionally parti-colored with white: his 242 a dwarf, pale, alpine form, *C. occidentalis*, Torr.

the scanty remains of the fruit of the former collection were analogous to that of *E. nanum* var. *Terglovense*, DC., well-formed fruit of the present collection is nearly as *E. villosum* is described and figured, having an inflexed margin with ciliate-spinulose teeth, thus lending confirmation to Dr. Hooker's view. And the back is almost as concave as in an *Omphalodes*. It will thus apparently take the name of *E. villosum* var. *aretioides*. 441. LITHOSPERMUM PILOSUM, Nutt. ; same as 295 of Parry. 442. MERTENSIA SIBIRICA, Don., non DC. Small form, exactly the *Pulmonaria ciliata*, Torr. Dr. Parry, as before (285), collected large forms, and now some with the leaves more glaucescent beneath. 443. MERTENSIA ALPINA, Don. *Pulmonaria alpina*, Torr. Barely a span high. 444. A very dwarf and hirsute form of the last, the sepals strikingly ciliate with long hirsute hairs, from South Park. These two numbers, and additional still dwarfer specimens of Parry's No. 286, induce me now to refer the latter (along with *M. Drummondii*) to *M. alpina*. 445. M. ALPINA, Don., var. ; the loosely paniculate, small-flowered form, Dr. Parry's 284, mixed in my set with M. FENDLERI, Gray, Rev. Mertens., in Suppl. Enum. Pl. Parry, p. 46 (339) ; the latter, perhaps, runs into the former, but it is readily known by the barely 5-cleft calyx ; the lobes only equalling or shorter than the tube.

HYDROPHYLLACEÆ.

439. PHACELIA CIRCINATA, Jacq. 446. P. POPEI, Torr. and Gray. "Flowers white." 447. P. (EUTOCA) SERICEA, Gray.

POLEMONIACEÆ.

448. POLEMONIUM CÆRULEUM, L. A very viscid-pubescent and glandular variety ; same as Parry's 275, and, (except that the stem is very leafy to the top,) Geyer's 530, and Fendler's 645. "Low and middle elevations.' 449. P. CÆRULEUM, L., answering to the plant of the Old World, except that the seeds are more or less wing-margined at each end ; so it is the var. ? *pterosperma*, Benth. in DC. "Subalpine, in swampy places." 450, 451. P. CONFERTUM, n. sp.* *P. pulcherrimum* in Enum. Pl. Parry, No. 274, but not of Hook. "High alpine, and at lower elevations." 452. P. PULCHELLUM, Bunge ; just the Altai plant ; and also accords with some of Hooker's speci-

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* POLEMONIUM CONFERTUM (sp. nov.): humile (3–9-pollicare) pl. m. viscoso glandulosum, odorem moschatum redolens; foliolis numerosissimis parvis (1½–5 lin. longis) ovalibus seu lineari-oblongis plerisque irregulariter *verticillato seu fasciculato-confertis* (*nempe singulis* 2-3-*sectis*) ; floribus ad apicem caulis simplicis capitato-confertis nutantibus; calycis segmentis lanceolatis acutis tubo oblongo brevioribus; *corolla infundibuliformi* (sæpius pollicari) calycem bis terve superante, lobis rotundatis tubo 2–5-plo brevioribus. Var. *α*. (*P. pulcherrimum*, Gray, Enum. Pl. Parry, non Hook.): capitulo florum denso, fructifero arcte spicato; corollæ læte cæruleæ limbo amplo. Hall and Harbour coll. 450; strictly alpine Var. *β*. MELLITUM: floribus in spicam laxiorem foliosum digestis nunc subpaniculatis odorem mellis spirantibus; corolla aut cærulea aut sæpius ochroleuca, lobis minoribus tubo productiore 3–4-plo brevioribus. In crevices of rocks, wholly below the alpine region. Leaves exaling the musky odor of var. *α*; the flowers with a delicious honey-like fragrance. Hall and Harbour, coll. 451. In the present condition of the species of *Polemonium*, I could not venture to add another to the list, if the present were not shown, by the fine suite of specimens now collected, to be a most distinct one It is probably (at least in the var. *α*) the very handsomest of the genus; and, as ripe seeds were collected, it may be brought into cultivation. I cannot doubt that the two varieties are of one species. The ampler limb of the corolla of var. *α* (when fully expanded sometimes ten or eleven lines in diameter,) often renders the funnel-form tube less conspicuous; but this form passes by gradations into those of var. *β*, in which the narrow tube of the corolla (9 or 10 lines long) three or four times exceeds the smaller lobes. Indeed, this connects *Polemonium* as closely with *Ipomopsis* as the latter is connected with true *Gilia*. A high alpine form of var. *α* was collected by Dr. Lyall in the Rocky Mountains farther north, lat. 49°, at the height of 8000 feet, having the verticillate leaflets of the species, but a less exserted corolla. It was taken for *P. viscosum*, Nutt.; but the minute leaflets of the latter are not verticillate or fascicled, although much crowded, and its calyx and corolla are quite different, allying it to *P. pulchellum*. I make small account of the ovules, finding them to vary widely in number in different flowers of the same inflorescence; but in var. *α*, I have counted a dozen in each cell, in var. *β*, usually only 4 to 6. The anthers are more oblong than in *P. cæruleum*. Beware of the change of shape which the effete anthers undergo: when dry, they are short-oval, when soaked they become elongated-oblong, as *P. Richardsonii* is figured in Bot. Mag. In like manner those of *P. cæruleum* change from rotund to short-oblong.

mens of *P. pulcherrimum*; both of which, with *P. capitatum*, etc., do seem to pass into Arctic forms of *P. cæruleum*. 453. Phlox Douglasii, Hook. 454. P. humilis, Dougl.? 455. P. Hoodii, Richardson. 403. Collomia gracilis, Dougl. 404. C. linearis, Nutt. 456. Gilia pinnatifida, Nutt. ined. 457. G. inconspicua, Dougl. 458. G. longiflora, Benth. (*Cantua longiflora*, Torr.) 459. G. aggregata, Spreng. (*G. pulchella*, Dougl.) With white as well as red flowers. 460. G. spicata, Nutt., in Pl. Gamb. The same as 271 of Parry's collection. 461. G. congesta, Hook, var.? with the leaves mostly entire. "Alpine." (462. *Chamærhodos erecta*. See Rosaceæ.) 463. Gilia (Leptodactylon) pungens, Benth., from which *G. Hookeri* scarcely if at all differs.

CONVOLVULACEÆ.

464. Cuscuta arvensis, Beyrich, var. *pentagona*, Engelm., a form with a small calyx. 579. Evolvulus argenteus, Pursh.

SOLANACEÆ.

465. Solanum rostratum, Dun. 466. Physalis lobata, Torr., a form with the leaves little lobed; the corolla purple or blue. 467. Solanum triflorum, Nutt.

GENTIANACEÆ.

468, 469. Gentiana affinis, Griseb.;[*] the former a more condensed form; the latter is 439 of Parry's separate collection. "Common in the subalpine region." 470. G. Parryi, Engelm.[†], a form with narrower leaves than Dr. Parry's specimens of the preceding year. "Subalpine." 471. G. detonsa, Griseb., which Dr. Engelmann, with reason, reduces to a variety of *G. crinita*.[‡] 472. G. frigida, Hænke, var. *algida*, Griseb.: most beautiful specimens of Parry's 305, so new to this country. 473. G. acuta, Michx.; in various forms; perhaps in some sets with a little of the too nearly related *G. tenuis*.[§] 474. G. humilis, Stev. 475. G. prostrata, var. *Americana*, Engelm. 476. Swertia perennis, L. 477. Pleurogyne rotata, Griseb.[‖] "South Park, subalpine." 553. Frasera speciosa, Dougl.

ASCLEPIADEÆ.

478. Asclepias brachystephana, Torr.; a dwarf form of this rare species, collected on the plains. 479. A. speciosa, Torr. (*A. Douglasii*, Hook.)

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[*] Gentiana affinis, Gris. *genuina:* caule virescente; bracteis calycem fere æquantibus; calycis lobis inæqualibus tubum longiorem integrum seu varius spathacæo-fissum subæquantibus; corolla anguste clavata pallide cœrulescente.

Gentiana affinis, var. *brachycalyx:* caule purpurascente; bracteis florum superiorum brevissimis; calycis tubo abbreviato truncato seu brevissime dentato lobatove; corolla majore subventricosa azurea.

This form has the appearance of a distinct species, but the characters taken from the calyx are variable; besides, Dr. Parry has sent specimens of it with a more distinctly lobed calyx. Other specimens collected by Mr. H. Engelmann, on Sweet Water River, have either an entire or a semispathaceous calyx, with lobes of different proportions; his specimens show many ascending stems growing from a large root, with numerous yellowish fleshy fibres.—*G. Engelmann.*

[†] Gentiana Parryi, Eng., a narrow-leaved form. Dr. Parry informs me that the narrow-leaved varieties are often one-flowered, and their stems single, while the broader-leaved form (coll. Parry, 1861, No. 304) usually occurs in bunches; the boat-shaped bracts, the small calyx lobes, and the bifid folds of the corolla are never wanting, and distinguish it readily from the allied *G. calycosa*.—*G. E.*

[‡] Gentiana barbellata, Engelm. in Trans. Acad. St. Louis, 2, t. 11 (ined.), is Dr. Parry's 440, a truly alpine, dwarf and very beautiful species, closely related to *G. crinita*, *ciliata*, &c.

[§] On examination of a series of specimens, Dr. Engelmann is inclined to view *G. tenuis*, Griseb. as an extreme form of *G. acuta*, and also to adopt the conclusions of those who regard the latter as specifically identical with *G. Amarella* of the Old World. He adds the following note.

Gentiana acuta, Michx. Undoubtedly an American subspecies of *G. Amarella*. Messrs. Hall and Harbour have sent a large suite of specimens, which, together with Dr. Parry's (1861, Nos. 307 and 309), show an extreme variability in size, manner of branching and arrangement of flowers, shape and size of leaves, proportion of calyx, size and color of corolla and size of seeds.—*G. Engelmann.*

[‖] Dr. Engelmann remarks upon this, 1st. That the ovules cover the whole surface of the ovarian cavity; 2d. That the structure of the corolla is that of *Swertia*, the nectarian glands at the base of the segments of the corolla being surrounded by a petaloid funnel with fringed edges; so that the curious lateral stigma principally separates the genus from *Swertia*.

"On low mountains." 480. A. OVALIFOLIA, Decaisne, Gray, Man., 1862, var. 481. A. VERTICILLATA, L., a common dwarf variety of the region, only three or four inches high.

NYCTAGINACEÆ.

482. OXYBAPHUS ANGUSTIFOLIUS, Sweet; the same as Fendler's 745. 483. O. NYCTAGINEUS, Sweet, with the upper leaves nearly sessile; both glabrous and hirsute forms. 572. ABRONIA FRAGRANS, Nutt. 573. A. CYCLOPTERA, Gray.

CHENOPODIACEÆ.

484. OBIONE ARGENTEA, Moq. The same as 574 of Wright, and 708 of Fendler. 485. CHENOPODIUM HYBRIDUM, L. "Low mountains; rare." 486. MONOLEPIS NUTTALLIANA, Moq. (487. See Amarantaceæ.) 488. CHENOPODINA DEPRESSA, perhaps also *C. prostrata*, Moq. "South Park, and on the plains." The root is annual. 489. C. MARITIMA, var. *erecta*, Moq. 308. OBIONE CANESCENS, Moq.

AMARANTACEÆ.

487. FRŒLICHIA (OPLOTHECA, Nutt.) FLORIDANA, Moq. "Sand hills, on the plains."[*]

POLYGONACEÆ.

490. POLYGONUM BISTORTA, L., var. *oblongifolium*, Meisn. 491. P. VIVIPARUM, L. 492. P. TENUE, Michx., in several varieties, one of them (Parry's No. 322*a* of 1862) from the alpine region, only two or three inches high, with oblong or oblong-lanceolate leaves, appears to be to *P. tenue* what *P. aviculare*, var. *nanum*, Boiss., is to the ordinary *P. aviculare*.[†] 493. P. COARCTATUM, Dougl., var. *minus*, Meisn.; a depauperate form? "Blue River, on the western slope of the Rocky Mountains." 494. OXYRIA DIGYNA, R. Br. 495. RUMEX VENOSUS, Pursh. 496, 498. R. SALICIFOLIUS, Weinm. 497. R. MARITIMUS, L. "Subalpine, and on the plains of Nebraska." 499. R. LONGIFOLIUS, DC. (*R. Hippolapathum* and *R. domesticus*, Fries. Extends into the mountains; very common. 500. ERIOGONUM ALATUM, Torr. 501. E. ANNUUM, Nutt. 502. E. EFFUSUM, Nutt., with rose-colored flowers. 503. E. CERNUUM, Nutt. 504. E. UMBELLATUM, Torr., both with straw-colored (Parry's 318,) and with deep yellow flowers (Parry's 315). 505. E. FLAVUM, Nutt., a low form from the alpine region, and a large variety (var. *crassifolium*, Benth.) from a less elevated region.

ELÆAGNACEÆ.

506. SHEPHERDIA CANADENSIS, Nutt. "Subalpine pine woods."

SANTALACEÆ.

507. COMANDRA PALLIDA, var. *angustifolia*, A. DC. *C. angustifolia*, Nutt., ined.

LORANTHACEÆ.

574. ARCEUTHOBIUM CAMPYLOPODUM, Engelm. Probably only *A. Americanum*, Nutt.

EUPHORBIACEÆ.

508. EUPHORBIA MARGINATA, Pursh. 509, (also 438 of Parry) E. MONTANA, Engelm. 510. E. DICTYOSPERMA, Fisch. and Mey. 511. E. HEXAGONA, Nutt.

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[*] On the plains, in similar situations, Mr. Hall collected *Amblogyne (Sarratia) Torreyi*, Gray, in Proceed. Amer. Acad., 5, p. 169, the narrow form, noted in H. Engelmann's collection. Parry's No. 323, referred doubtfully to *Montelia*, is probably the male of this.

[†] Dr. Engelmann, in a letter, referring all the forms of No. 492 to *P. tenue*, arranges them as follows:—"Var. *α*. COMMUNE: majus; nucibus majoribus (sesquilineam longis). *β*. MICROSPERMUM: minus, gracilius; nucibus vix lineam longis. *γ*. LATIFOLIUM; humile; foliis oblongis; spicis coarctatis; bracteis superioribus (aristo destitutis) muticis. Meisner, in the Prodromus, is wrong in saying that the nuts are subopaque or rough on the edge; they are perfectly smooth and shining with concave sides and an acumination."

512. E. PETALOIDEA, Engelm., with the small-flowered form named *E. polyclada* by Boissier. 513. E. FENDLERI, Torr. and Gray; the inappendiculate form. 514. CROTON (HENDECANDRA) MURICATUM, Nutt. 309. TRAGIA RAMOSA, Torr.

CUPULIFERÆ.

515. QUERCUS DOUGLASII, var. *Neo-Mexicana*, A. DC. 516. CORYLUS ROSTRATA, Ait.

BETULACEÆ.

517. BETULA GLANDULOSA, Michx. "Subalpine." 518. B. PAPYRACEA, Michx., var., called *B. alba*, var. *glutinosa* in Parry's Enumeration. 519. ALNUS VIRIDIS, Ait.

SALICACEÆ.

520. SALIX ARCTICA, R. Br. 521. S. RETICULATA, L. This and the last are high alpine species. 522. S. ROSTRATA, Richards. (*S. vagans*, Anders.) 523. S. GLAUCA, L. "Subalpine." 524. S. CORDATA, Muhl., or VITELLINA, L. 525. POPULUS ANGUSTIFOLIA, Torr. "Foot of the mountains." 526. P. BALSAMIFERA, L., var. *candicans.* "Subalpine; rather rare." 527. P. TREMULOIDES, Michx.

CONIFERÆ.

528. PINUS PONDEROSA, Dougl.; Engelm. in Enum. Pl. Parry, Suppl., p. (39) 332. 529. P. FLEXILIS, James; Engelm., l. c. 530. P. ARISTATA, Engelm. l. c. 531. P. CONTORTA, Dougl.; Engelm., l. c. 532. P. EDULIS, Engelm. 533. ABIES MENZIESII, Lindl. 534. A. DOUGLASII, Lindl.

ORCHIDACEÆ.

535. PLATANTHERA HYPERBOREA, Lindl. 536. P. OBTUSATA, Lindl. 537. CALYPSO BOREALIS, Salisb. 538. CYPRIPEDIUM PARVIFLORUM, Salisb. 539. SPIRANTHES GEMMIPARA, Lindl., from South Park, in the Rocky Mountains, (and one or two specimens were collected by Dr. Parry on South Clear Creek, July, No. 441);—quite resembling the Irish plant in aspect and in the labellum, etc., but the sepals rather narrower and less blunt,—mixed (in my set) with taller specimens, from the plains, of a narrow-leaved form of S. CERNUA, having very large nipple-shaped calli on the base of the labellum. The labellum of the former, when flattened out, is in outline ovate or ovate-oblong, with a narrowed subapical portion below the cordate-rotund erose-crisped summit. The forms of *S. cernua*, or the species allied to it, are thus far quite inextricable. The present Rocky Mountain specimens are exceedingly interesting, whether absolutely identical or not with the much-vexed and isolated *S. gemmipara.* They have not the long-acuminate bracts of *S. Romanzoviana*, of which my specimens are too young to allow a comparison of the flowers.

ALISMACEÆ.

540. TRIGLOCHIN PALUSTRE, L. 541. T. MARITIMUM, L. Both from the mountains.

IRIDACEÆ.

542. IRIS TENAX, Dougl.? "Subalpine, and at lower elevations; common." This, now collected in flower, we had in fruit, collected on the Laramie Mountains by Dr. Hayden, and at Bridger's Pass by Mr. H. Engelmann. The spathe is more scarious and the capsules larger than in *I. tenax.*

LILIACEÆ, incl. SMILACEÆ, MELANTHACEÆ, etc.

543. STREPTOPUS AMPLEXIFOLIUS, DC. 544. SMILACINA STELLATA, Desf. 545. ALLIUM STELLATUM, Fraser. 546. A. SCHŒNOPRASUM, L. 547. A. CERNUUM, Roth. 548. LEUCOCRINUM MONTANUM, Nutt. 549. CALOCHORTUS VENUS-

tus, Benth. ex Torr. 550. Zygadenus glaucus, Nutt. 551. Amianthium Nuttallii, Gray. 552. Lloydia serotina, Reich. "Pike's Peak, in the alpine region." (553. See Gentianaceæ.)

JUNCACEÆ.

554. Luzula spicata, DC., var. near *L. Peruviana;* the same as 392 of Dr. Parry. 555. L. parviflora, DC. 556. L. comosa, E. Meyer (with a little *L. campestris*). 557. Juncus triglumis, L. 558. J. articulatus, L., var. *pelocarpus*, Gray, Man. 559. J. bufonius, L. "Subalpine." 560. J. castaneus, Sm., an alpine form, the same as Parry's 358. 561, 562. J. arcticus, Willd., var. *gracilis*, Hook. ? Alpine and subalpine. The same as Parry's 360. It appears like a depauperate and attenuated form of *J. arcticus;* but as most of the cauline sheaths are leaf-bearing, it is probably of a distinct species, so far as I know, yet undescribed. Dr. Lyall collected it, as well as the true *J. arcticus*, in the Cascade Mountains, farther north. 563. J. arcticus, Willd., proper, with leafless sheaths and more less attenuated stems. 564. J. xiphioides, E. Meyer. Well marked by its flattened stems as well as leaves. It was also collected in this region by Fendler (858), H. Engelmann, and in the Rocky Mountains, farther north, by Bourgeau. 565. J. ensifolius, Wikstr. This has "terete flaccid culms." 566. J. Menziesii, R. Br. ; the same as Parry's 361 so named, Fendler's 857, Wright's 1924, and Coulter's 808, the var. *Californicus*, Hook. and Arn. Probably an unpublished species. 567. J. Balticus, Willd.

568—580. Various Dicotyledonous plants, enumerated above under their respective orders.

CYPERACEÆ.

581. Fimbristylis laxa, Vahl. 582. Scirpus pauciflorus, Lightf., which Drummond had formerly collected in the Rocky Mountains, and which has been detected at several points along the northern frontier of the United States. 583. S. cæspitosus, L. Also subalpine. 584. Cyperus Schweinitzii, Torr. "Low mountains, lat. 39°."

585—620. *Carices* here given from the determination and notes of Dr. Boott:—

585. Carex atrata, L. (ovata) : spicis 3 oblongis (inferioribus pedunculatis parce masculis) atro-purpureis ; perigyniis floriferis glauco-viridibus. 586. C. atrata : spicis contiguis ovatis crassis, inferiori subsessili ; perigyniis floriferis margine viridibus squamis atropurpureis demum ferrugineis subæquilongis. Vide Parry, 389. 577. C. atrata (nigra) : spicis subrotundis congestis vel infima discreta sessilibus ; perigyniis ovalibus vel ellipticis cylindrico-rostratis superne præcipue ad margines rostri dentatis ; stig. 2-3. Gracilior, altior quam pl. Helvetica rostroque longiore, perigyniis pallidis. Eadem ac Parry, 383. 588. C. atrata, L. and C. rigida, Good., mixed. 589. Carex festiva, Dewey. 590. C. festiva, Dewey ; young.

591. Carex Bonplandii, Kunth. ? var. *minor :* perigyniis rarissime ad margines scabris. See Couthouy's specimens from the Andes of Quito.

592. Carex muricata, L. ? with smaller perigynia, like Fendler's No. 884, in part. 593. C. siccata, Dewey. 594. C. disticha, Huds. (*C. Sartwellii*, Dewey.) 595. C. Gayana, Desv., Boott, Ill., t. 411. 596. C. Deweyana Schw. 597. C. stenophylla, Wahl.

598, 599. Kobresia scirpina, Willd., or perhaps with some K. caricina, Willd.

600. Carex Douglasii, Boott. Here, as in all other collections, in flower only. 601. C. tenella, Schk. 602. C. canescens, L. 603. C. polytrichoides, Muhl.

604. Carex filifolia, Nutt., var. culmo validiori ; perigyniis plano-triquetris glabris margine serrulatis ; squamis minus late scariosis ; rhacheola ut in

forma typica. 605. C. FILIFOLIA, Nutt.; the ordinary form. [Parry's 442 is a high alpine form of the same species.]

606. CAREX OBTUSATA, Lil. 607. C. PAUCIFLORA, Lightf. 608. C. PYRENAICA, Wahl. 609. C. NIGRICANS, C. A. Meyer. 610. C. SCIRPOIDEA, Michx. 611. C. GEYERI, Boott. 612. C. BACKII, Boott. 613. C. CAPILLARIS, L.

614. CAREX LONGIROSTRIS, Torr., var. *minor;* culmo brevi; spicis abbreviatis; rostro breviore. 615. C. AMPULLACEA, L. (*utriculata*, Boott.) 616. C. JAMESII, Torr. and C. ANGUSTATA, Boott, mixed. 617. C. PARRYANA, Dewey. Some specimens have two spikes, the terminal masculine; others have either one or two spikes, both wholly feminine. 618. C. ALPINA, Sm. (*Vahlii*, Schk.) 619. C. BUXBAUMII, Wahl. 620. C. ROSSII, Boott.

GRAMINEÆ.*

621. An ambiguous and undetermined Grass, between *Festuca* and *Melica*. 622. DANTHONIA SERICEA, Nutt. [*D. unispicata*, Munro, ined., is a reduced form of this, to which belongs Geyer's No. 189.] 623. AVENA STRIATA, Michx. 624. CALAMAGROSTIS SYLVATICA, DC. 625. TRISETUM SUBSPICATUM, Beauv., with a remarkable open-panicled form. 626. STIPA VIRIDULA, Trin., the *S. parviflora*, Nutt. 627. AIRA CÆSPITOSA, L., two forms; the smaller and more alpine of which is the var. *arctica* (*Deschampsia brevifolia*, R. Br.); the larger is intermediate between that and the ordinary form of the species. Parry's 367 of 1862 connects the two.

628. HIEROCHLOA BOREALIS, R. and S. 629. GLYCERIA AQUATICA, Smith. 630. G. (HELEOCHLOA) AIROIDES, Thurb., the *Poa airoides*, Nutt.

631. VILFA TRICHOLEPIS, Torr.; a remarkable species, which it may be necessary upon further study to remove from the genus. 632. MUHLENBERGIA PUNGENS, n. sp.† 633. ERIOCOMA CUSPIDATA, Nutt. 634. ORYZOPSIS MICRANTHA; *Urachne micrantha*, Trin. A very distinct species, differing from *O. Canadensis*, Torr., in its elongated panicle, smaller spikelets, glabrous paleæ, and much longer awn. 635. GRAPHEPHORUM? FLEXUOSUM, n. sp.‡ 636. BOUTELOUA OLIGOSTACHYA Torr. 637. BUCHLŒ DACTYLOIDES, Engelm. *leria*, Nutt.); the staminate plant only. 638. MUNROA SQUARROSA, Torr. 639. SPARTINA GRACILIS, Trin.; the name wrongly attributed to Hooker by Steudel; it is S. JUNCIFORMIS, Engelm. and Gray, Pl. Lindl. 1, No. 207. 640. BRIZOPYRUM SPICATUM, Hook, var. *strictum*.

641. SPOROBOLUS ASPERIFOLIUS, Nees and Meyen. 642. MUHLENBERGIA GRACILLIMA, Torr. 643. SPOROBOLUS RAMULOSUS, HBK. 644. LEPTOCHLOA FASCICULARIS, Gray; a remarkable and large form; which has been by seve-

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* By *Prof. George Thurber*. On account of illness, Prof. Thurber has been prevented from studying these Grasses as thoroughly as could be wished. A more critical account of some of them may be expected hereafter.

† MUHLENBERGIA PUNGENS (Thurber, sp. nov.): culmo e rhizomate repente 1–1½-pedali foliisque rigidis convolutis pungentibus patentibus (1–1½ poll. longis haud lineam latis) minute pubescentibus, ligula brevi ciliata; paniculæ 3–4-pollicaris radiis solitariis dissitis basi nudis fasciculatim ramosis; pedicellis capillaribus scabris spiculis (cum arista 2½ lin. longis) pluries longioribus; glumis fere æqualibus acuminatis vel seta apiculatis floro dimidio brevioribus; callo nudo rudimento minimo prædito; palea inferiori scabra acuta in aristam asperam semi-vel sublineam longam producta, superiori subæquilonga, nervis excurrentibus bisetiferis; staminibus 3.—A striking species, with very pale green foliage, and a purplish panicle. Collected also by Mr. H. Engelmann in Nebraska, and by Dr. J. S. Newberry in Ives' Colorado Expedition.

‡ GRAPHEPHORUM? FLEXUOSUM (Thurber, sp. nov.): culmo tripedali lævi; vaginis internodia superantibus annulo pilorum pro ligula instructis; foliis sesquipedalibus 2 lin. latis setaceo-acuminatis; panicula laxiflora, radiis sparsis (infimis distantibus circ. 4 poll. longis) inferne nudis in ramulos pancos capillares solutis; pedicellis spiculis ovatis compressis 3–6-floris) 2½–3 lin. longis) duplo vel quadruplo longioribus; glumis membranaceis uninerviis acutis spicula dimidio brevioribus; palea inferiori carinata trinervi (nervis lateralibus prominentibus) scabro-pubescente apice eroso-denticulata cum mucrone basi villifera, superiori subæquilonga eximie bicarinata bidentata. Stam. 3. Ovarium stipitatum. Squamulæ 2, oblique truncatæ. Caryopsis libera. Dr. J. M. Bigelow collected this Grass several years ago on the Canadian River. It is doubtfully referred to *Graphephorum* as that genus is defined by Dr. Gray in the Proceedings of the Botanical Society of Canada. But the joints of the rhachis are very short, and the tuft of hairs seems rather to belong to the palea.

ral western collectors, but I am unable to distinguish it specifically from the plant of the Atlantic States. 645. TRICUSPIS PURPUREA, Gray. 646. STIPA MONGOLICA, Turcz. (*Ptilagrostis Mongolica*, Griseb. in Ledeb., Fl. Ross.) I have no specimen by which to confirm this determination, but it accords so well with the description, except as to size, as to leave little doubt.* This makes the third species with a plumose awn found in our territory.

647. SPOROBOLUS AIROIDES, Torr. 648. S. CRYPTANDRUS, Gray, same as 945 of Fendler. 649. CALAMAGROSTIS STRICTA, Trin., with some C. SYLVATICA intermixed. 650. KŒLERIA CRISTATA, Pers., a very attenuated form. 651. ANDROPOGON ARGENTEUS, DC. (*A. Jamesii* and *A. glaucus*, Torr.) 652. ARISTIDA PURPUREA, Nutt.; the form called *A. Fendleriana* by Steudel. 653. PASPALUM SETACEUM, Michx.

654. ELYMUS near CONDENSATUS, Presl. and apparently E. TRITICOIDES, Nutt., mixed. 655. TRITICUM REPENS, L., var. [656. T. CANINUM, L. var., the same as Parry's 381, named *T. ægilopoides* in the coll. of 1861, but wrongly; along with attenuated T. REPENS, L. 657. T. ÆGILOPOIDES, Turcz., *A. gropyrum divergens*, Nees.]

658. BECKMANNIA ERUCÆFORMIS, Host. 659. SPOROBOLUS AIROIDES, Torr. 660. VILFA DEPAUPERATA, Torr. This was described from an extremely reduced form of a very variable species, of which *V. utilis*, Torr., is an attenuated state. 661. V. CUSPIDATA, Torr. Like others of the genus, this presents great differences in the relative length of the glumes and paleæ.

662. GLYCERIA PAUCIFLORA, Presl. 663. CATABROSA AQUATICA, Beauv. 664. MUHLENBERGIA GRACILIS, Trin. 665. FESTUCA OVINA, L., var. *duriuscula*, Gray. 666. F. RUBRA, L.; very young. 667. F. SCABRELLA, Torr.? Perhaps a very narrow-leaved form of this species, of which specimens collected by Dr. Bigelow in New Mexico are the opposite extreme.

668. POA near P. NEMORALIS, L. It is 375 of Parry. 669. P. ANDINA, Nutt. in herb. Acad. The Poas of this collection, including some undistributed specimens, present several puzzling forms, which can be accurately determined only by a much more thorough study than can be given them at present. 670. P. ARCTICA, R. Br., (Parry's 376,) mixed with some of *P. alpina.*

671. AGROSTIS VARIANS, Trin. Agrees well with Hooker's No. 217, quoted by Trinius, but some specimens have a strong awn. 672. POA SEROTINA, Ehrh. 673. AGROSTIS near RUPESTRIS. 674. POA ALPINA, L., mixed with one which may be a variety of it. [675. POA, near 669 and 677.] 676. P. ARCTICA, R. Br.? 677. P. ANDINA, Nutt. 678. POA, undetermined species.

679. SITANION ELYMOIDES, Raf. Two forms of this variable grass, which will probably be reduced to *Elymus*. 680. TRITICIUM CANINUM, L., var. same as 381 of Parry. 681. HORDEUM JUBATUM, L. 682. ALOPECURUS PRATENSIS, var. ALPESTRIS, Wahl. (*A. glaucus*, Less.) ex Gray. 683. A. GENICULATUS, var. ARISTULATUS, Michx. 686. LEPTANS PANICULATUS, Nutt. 685. VASEYA COMATA, n. gen. and sp. This remarkable grass, which really appears to form a new genus, intermediate between the Arundinaceæ and the Agrostideæ, is dedicated (by the collectors' desire, seconded by Dr. Gray) to Dr. George Vasey, of Ringwood, Illinois, one of the most zealous of our Western botanists. The following are its principal characters:

VASEYA, nov. gen.

Panicula coarctata. Spiculæ uniflorœ, herbaceo-membranaceæ. Glumæ uninerves florem adæquantes. Callus obliquus, comam pilorum paleis æquilongam gerens. Palea inferior trinervis in aristam gracilem attenuata; superior æquilonga, acuminata. Stamina 3. Ovarium stipitatum. Styli ultra medium pilis stigmaticis longis simplicissimis instructi. Squamulæ . . . Caryopris . . . . V. COMATA, a native of the plains of Nebraska; is a perennial grass, with the aspect of a *Mulenbergia* or of a *Polypogon*, but with a coma of silky hairs around the flower, as in a *Calamagrostis*. Culm a foot and a half high, from a creeping rhizoma, retrorsely pubescent at the nodes. Sheaths scabrous, equalling the internodes; ligule short, fringed; leaves 3 or 4 inches long, dull green, rough on both sides. Panicle lead-colored, about 3 inches long; the branches solitary, appressed, densely many-flowered. Spikelets very short-pedicelled, compressed, pubescent, a line and a half long. Glumes narrow, very acute, serrulate on the keel, the lower a little the longer. Awn rough and flexuose, purplish, three or four lines long.—*G. Thurber.*

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* A comparison with an authentic but imperfect Mongolian specimen confirms Prof. Thurber's determination.—*A. G.*

FILICES.

687. ASPIDIUM FILIX-MAS, Swartz.; apparently identical with the European plant. 688. CRYPTOGRAMME ACROSTICHOIDES, R. Br., by Sir Wm. Hooker regarded as a variety of *Allosorus crispus*. 689. ASPLENIUM SEPTENTRIONALE, L. This was collected by C. Wright farther south; and these two stations are the only known American ones. 690. CYSTOPTERIS FRAGILIS, Bemh., mixed with a WOODSIA, the same as Parry's 394, formerly named *W. obtusa;* but it is of a different species. 691. CHEILANTHES FENDLERI, Hook. 692. ASPLENIUM TRICHOMANES, L. 693. NOTHOCHLÆNA FENDLERI, Kunze, Filices, 2, p. 87, t. 136; the same as Parry's 396. A species recently distinguished from *N. dealbata*. 694. POLYPODIUM VULGARE, L. 695. P. DRYOPTERIS, L.

Catalogue of the FISHES of Lower California, in the Smithsonian Institution, Collected by Mr. J. Xantus.

BY THEODORE GILL.

PART IV.

Subfamily *SERRANINÆ* (Swainson.)

Nine genera of this subfamily are now known to be represented by species along the western coast of America and the Gallapagos Islands. They may be thus distinguished:—

I. Caudal with the lobes acuminate.
Lateral line before superior, deflected behind............... Pronotogrammus.
Lateral line normal... Brachyrhinus.
II. Caudal not forked.
A. Canine teeth developed.
B. Dorsal spines XI.
C Nostrils in a vertical row................................ Mycteroperca.
CC. Nostrils in a longitudinal row.
Body oblong; smooth above lateral line............ Labroperca.
Body oval, with ctenoid scales......................... Epinephelus.
BB. Dorsal emarginated; spines X.
C. Head with profile decurved, scaly above.............. Paralabrax.
CC. Head conic; naked between eyes.
Spinous dorsal rounded.................................. Atractoperca.
Spinous dorsal, incurved behind the third elongated spine... Gonioperca.
AA. Canine teeth entirely obsolete .... Dermatolepis.

The preceding table gives only the more striking characters; those are accompanied by others, which appear to amply authorize their generic distinction. In the table, the genera do not follow each other in a strictly natural order.

Genus PRONOTOGRAMMUS Gill.

This genus has the form of *Brachyrhinus.* The body is covered by moderate,